Math 3
Unit 1 Day 3 Notes – Systems of Inequalities

Name: Key
Date:

Graphing an Inequality

1. Solve the inequality for y (if necessary). Graph each inequality on the same set of axes.
2. Graph the inequality as if it contained an = sign.
3. Draw the line solid if the inequality is $\leq$ or $\geq$
4. Draw the line dashed if the inequality is $<$ or $>$
5. Pick a point not on the line to use as a test point. The point (0,0) is a good test point if it is not on the line.
6. If the point makes the inequality true, shade that side of the line. If the point does not make the inequality true, shade the opposite side of the line.
7. The area where the shading overlaps is the solution to the system of inequalities.

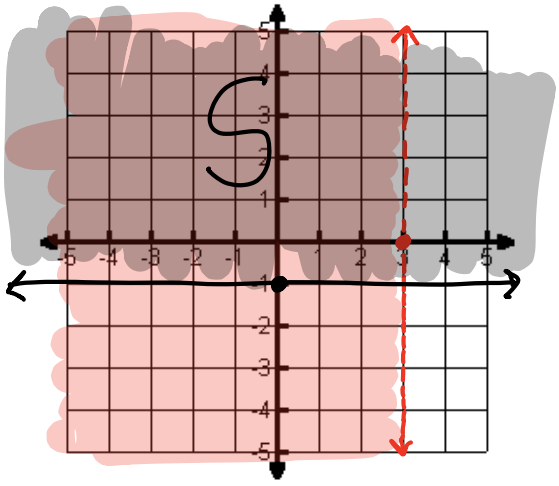
$\leq$ or $<$ shaded below

$\geq$ or $>$ shaded above

PRACTICE:

Ex: $x < 3$ (dotted line | shaded below) (vertical line)

$y \geq -1$ (horizontal line) (solid line | shaded above)



Ex: $3x - 2y \leq -2$

$x + 4y \geq -12$

$-x \quad -x$

$\frac{4y}{4} \geq \frac{-1x - 12}{4} \quad \frac{4}{4}$

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

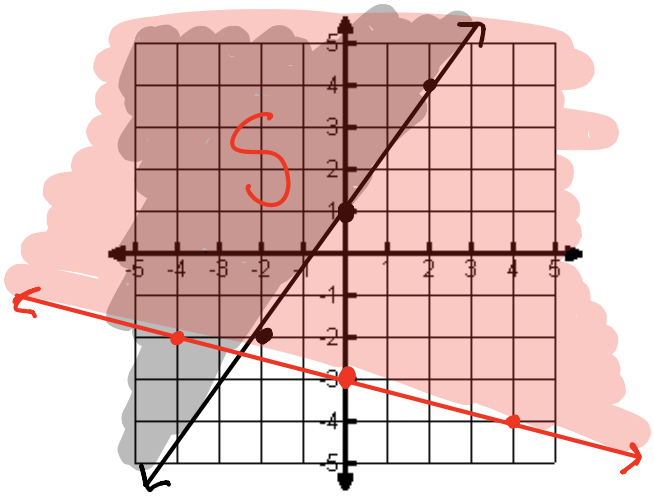
solid above

$-3x \quad -3x$

$\frac{-2y}{-2} \leq \frac{-3x - 2}{-2} \quad \frac{-2}{-2}$

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

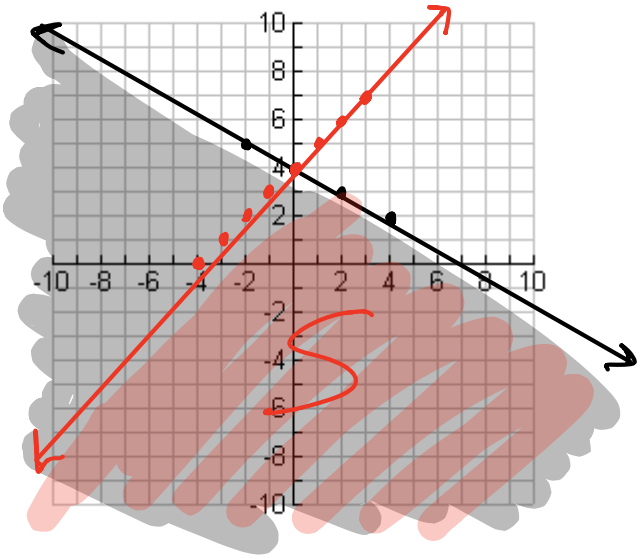
solid above



Graph the following inequalities on graph paper.
Used colored pencils to shade.

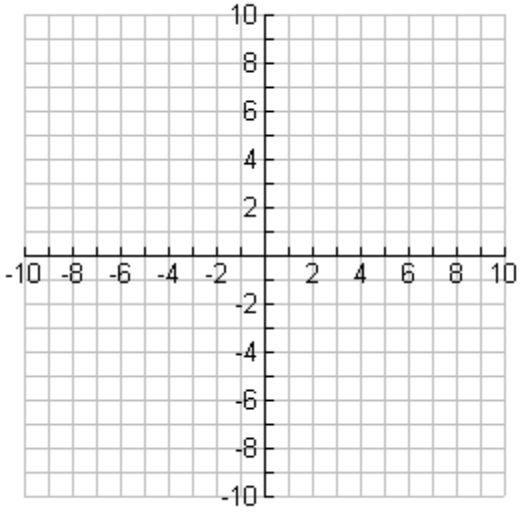
1) $x + 2y \leq 8$ → $y \leq \frac{-1}{2}x + 4$

$y \leq x + 4$



2) $x + y < 3$

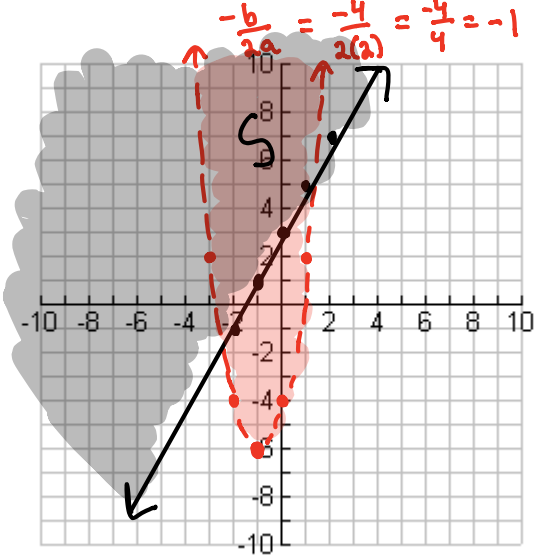
$y \geq -x^2$



3) $2x - y \leq -3$ → $y \geq 2x + 3$

$y > 2x^2 + 4x - 4$

$\frac{-b}{2a} = \frac{-4}{2(2)} = \frac{-4}{4} = -1$



4) **Katie works part-time at the Fallbrook Riding Stable. She makes $5 an hour for exercising horses and $10 an hour for cleaning stalls. Because Katie is a full-time student, she cannot work more than 12 hours per week. Graph two inequalities that illustrate how many hours Katie needs to work at each job if she plans to earn not less than $90 per week.**

Write a system of inequalities to model the given scenario.

Use your graphing calculator, to find a possible solution.