

5.7 NOTES - Graphing Systems of Linear Inequalities

LESSON 5.7 **LEARNING GOALS:**

Graphing Systems of Linear Inequalities

- 1) Graph systems of two or more linear inequalities and identify the region that represents the solution of the system.
- 2) Write the system of linear inequalities that represents a given shaded area.

Common Core State Standards
HSA-CEA.3, HSA-REI.D.12

BELLWORK: Graph the linear inequality.

$y > 3x + 1$

$0 > 3(0) + 1 ?$

$0 > 1 ?$

FALSE, so shade away from the point (0, 0)

LESSON 3.5 - Graphing Systems Inequalities

- The following is an example of a system of linear inequalities in two variables:

$$x + y \leq 6$$

$$2x - y > 4$$
- A **SOLUTION** to the system of linear inequalities is any ordered pair that satisfies both inequalities.
- The **GRAPH** of the system of linear inequalities is the graph of all solutions of the system.

HOW TO GRAPH SYSTEMS OF INEQUALITIES

STEP 1: Graph the lines of the inequalities.

STEP 2: Shade the regions that represent the solution of each inequality.

STEP 3: The solution of a system of inequalities is the region where the shaded regions from STEP 2 overlap.

Graph the system of linear inequalities.

$x > -4$

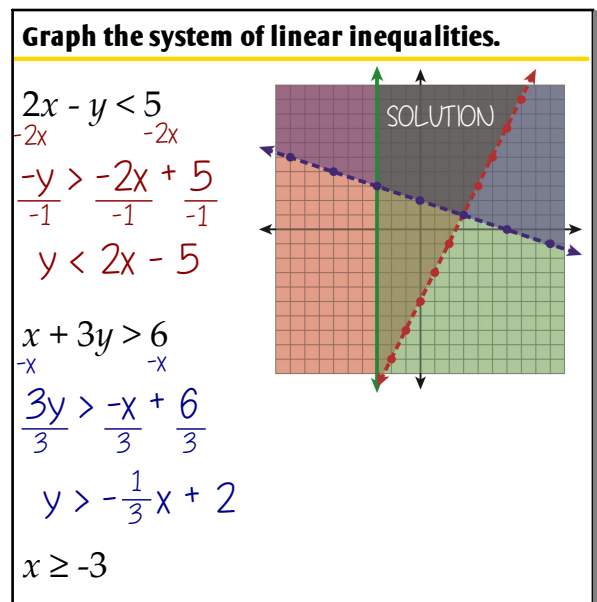
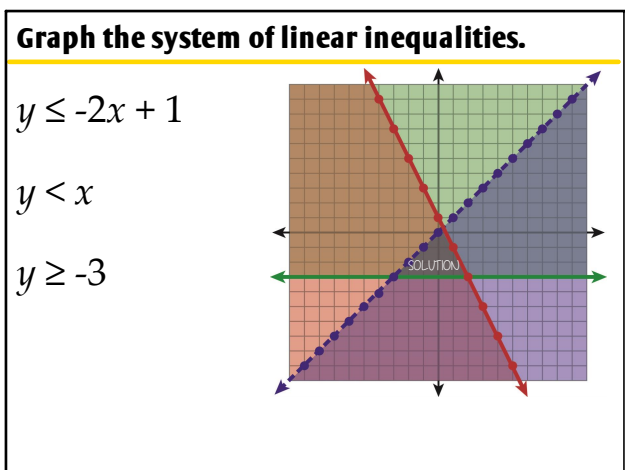
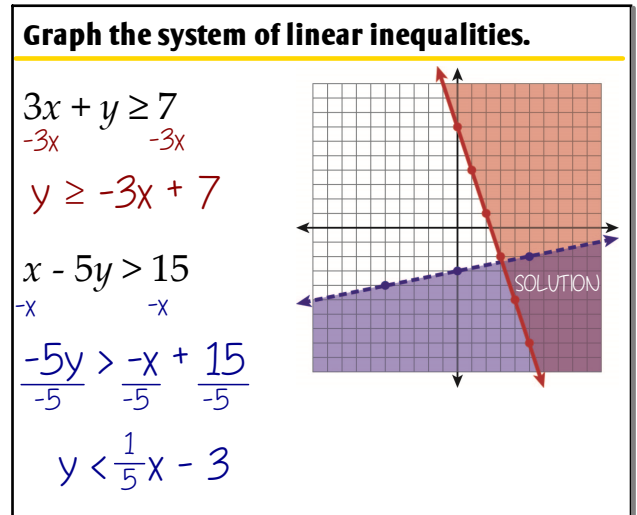
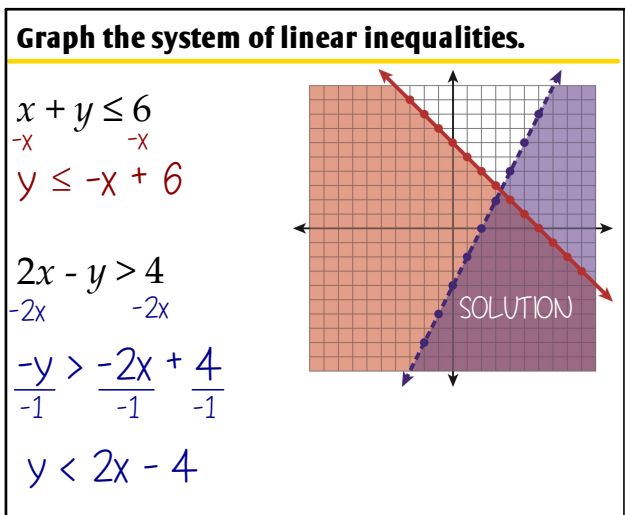
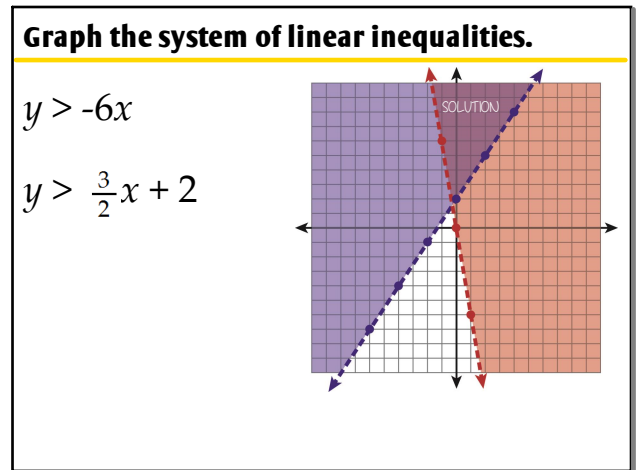
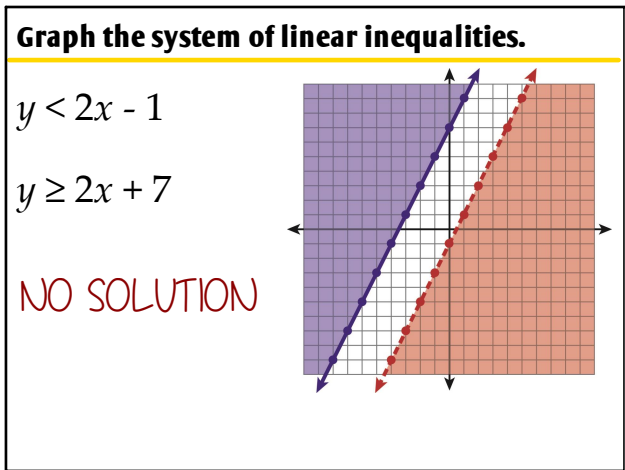
$y > -1$

Graph the system of linear inequalities.

$y > 2x - 1$

$y \leq 2x + 7$

5.7 NOTES - Graphing Systems of Linear Inequalities



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Graph the system of linear inequalities.

$$x + 2y \leq 10$$

$$\frac{2y}{2} > \frac{-x}{2} + \frac{10}{2}$$

$$y > -\frac{1}{2}x + 5$$

$$2x + y \leq 8$$

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

$$y < -2x + 8$$

$$2x - 5y < 20$$

$$\frac{-5y}{-5} < \frac{-2x}{-5} + \frac{20}{-5}$$

$$y > \frac{2}{5}x - 4$$

$$x > -4$$

Graph the system of linear inequalities.

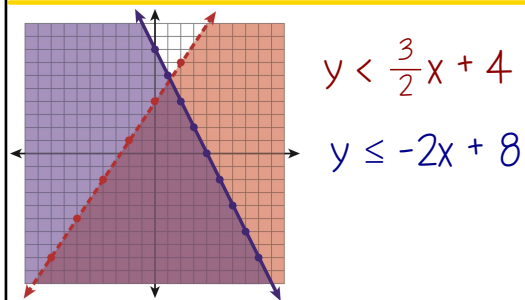
$$y < -x$$

$$y < 2x - 3$$

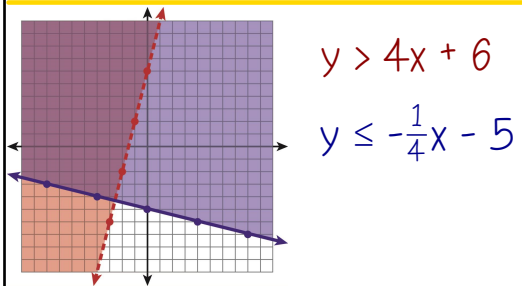
$$y \geq -\frac{1}{3}x + 4$$

NO SOLUTION

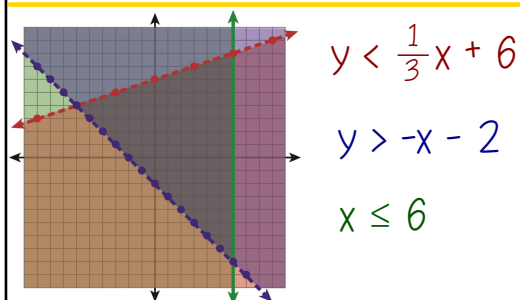
Write a system of linear inequalities for the shaded region shown.



Write a system of linear inequalities for the shaded region shown.



Write a system of linear inequalities for the shaded region shown.



HOMWORK:

5.7 Worksheet - Graphing Systems of Linear Inequalities