

Algebra 1: 7.2 HW - Part 1  
Systems of Linear Inequalities

Name \_\_\_\_\_ Period \_\_\_\_\_

Determine whether the given point is a solution to the system of linear inequalities.

1. 
$$\begin{cases} y \leq 7x - 13 \\ y > 3x + 6 \end{cases}$$

Point (1, 19)

$$y \leq 7x - 13$$

$$19 \leq 7(1) - 13$$

$$19 \leq 7 - 13$$

$$19 \leq -6$$

Not true

$$y > 3x + 6$$

$$19 > 3(1) + 6$$

$$19 > 3 + 6$$

$$19 > 9$$

True

(1, 19) is not a solution.

2. 
$$\begin{cases} 9x - y \geq 23 \\ 5x + 0.2y \geq 20 \end{cases}$$

Point (4, 10)

$$9x - y \geq 23$$

$$9(4) - 10 \geq 23$$

$$36 - 10 \geq 23$$

$$25 \geq 23$$

True.

$$5x + 0.2y \geq 20$$

$$5(4) + 0.2(10) \geq 20$$

$$20 + 2 \geq 20$$

$$22 \geq 20$$

True

(4, 10) is a solution

3. 
$$\begin{cases} y > -13x + 29 \\ y \leq 9x + 11 \end{cases}$$

Point (-2, 40)

$$y > -13x + 29$$

$$40 > -13(-2) + 29$$

$$40 > 26 + 29$$

$$40 > 55$$

Not true

$$y \leq 9x + 11$$

$$40 \leq 9(-2) + 11$$

$$40 \leq -18 + 11$$

$$40 \leq -7$$

Not true

(-2, 40) is not a solution.

4. 
$$\begin{cases} 10x + 6y > 12 \\ -x + y < 10 \end{cases}$$

Point (-2, 6)

$$10x + 6y > 12$$

$$10(-2) + 6(6) > 12$$

$$-20 + 36 > 12$$

$$16 > 12$$

True

$$-x + y < 10$$

$$-(-2) + 6 < 10$$

$$2 + 6 < 10$$

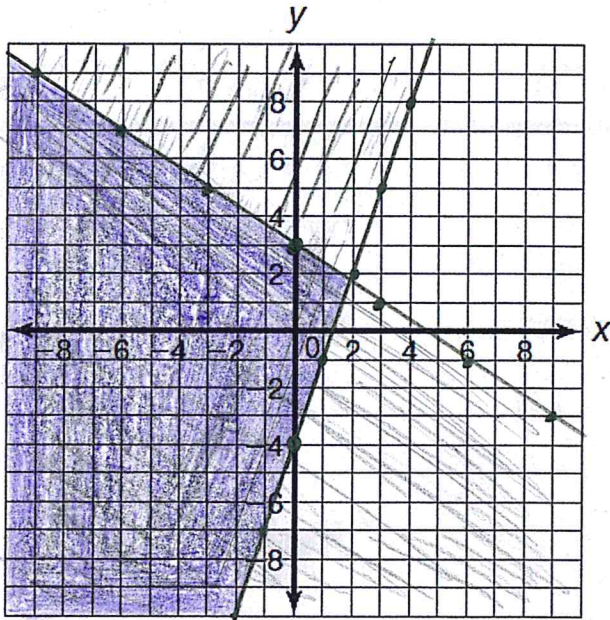
$$8 < 10$$

True

(-2, 6) is a solution.

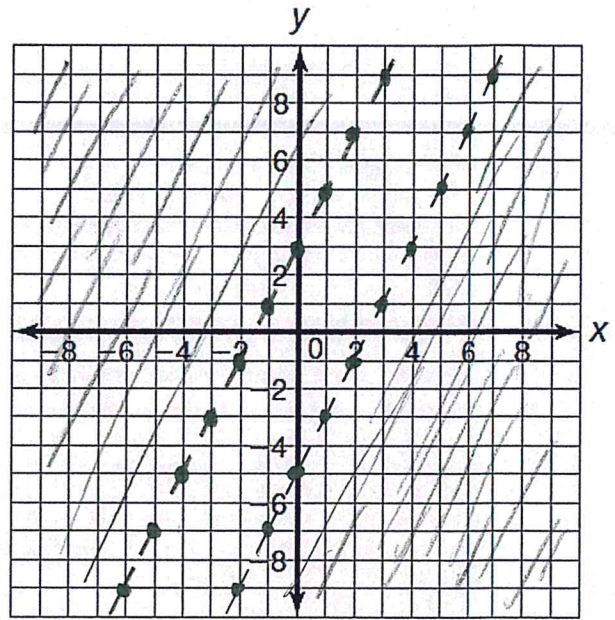
Graph each system of linear inequalities and identify two solutions.

5. 
$$\begin{cases} y \leq -\frac{2}{3}x + 3 & \text{solid line, shade below} \\ y \geq 3x - 4 & \text{solid line, shade above} \end{cases}$$



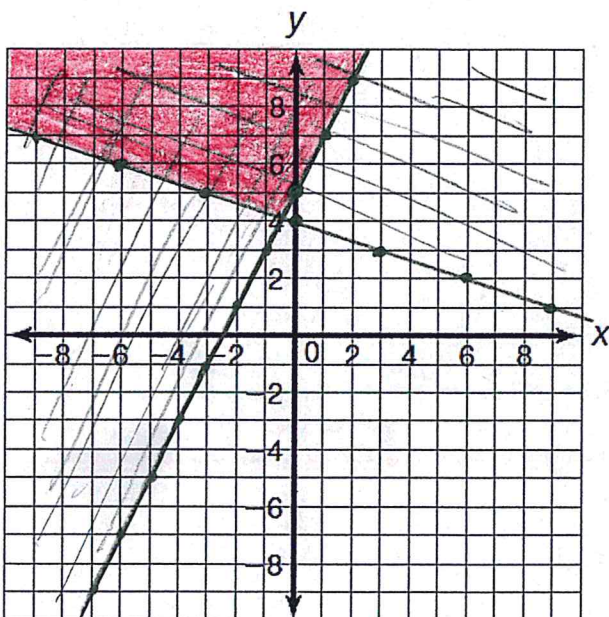
Solutions - any points in the purple region, i.e.  $(-4, 2)$ ,  $(-6, -3)$

6. 
$$\begin{cases} y > 2x + 3 & \text{dashed line, shade above} \\ y < 2x - 5 & \text{dashed line, shade below} \end{cases}$$



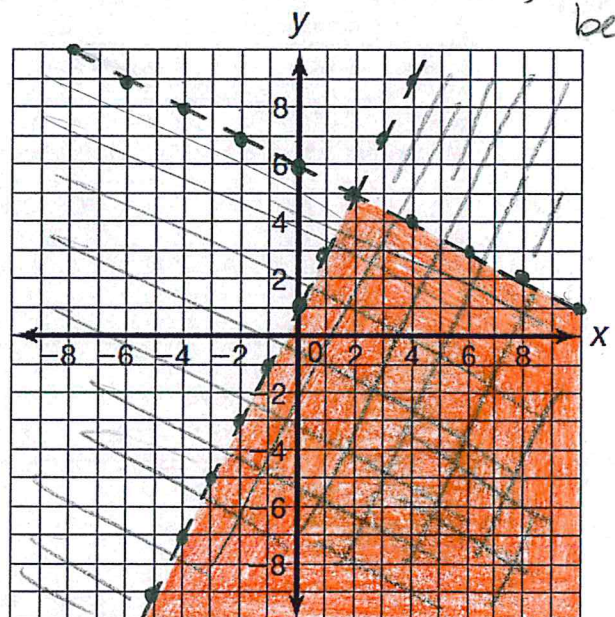
No solution

7. 
$$\begin{cases} y \geq -\frac{1}{3}x + 4 & \text{solid line, shade above} \\ y \geq 2x + 5 & \text{solid line, shade above} \end{cases}$$



Solutions - any points in the red region, i.e.  $(-3, 5)$ ,  $(0, 8)$

8. 
$$\begin{cases} y < -\frac{1}{2}x + 6 & \text{dashed line, shade below} \\ y < 2x + 1 & \text{dashed line, shade below} \end{cases}$$



Solutions - any points in the orange region, i.e.  $(2, 0)$ ,  $(4, 6)$