

NOTES: SYSTEMS OF LINEAR INEQUALITIES

SOLUTIONS OF SYSTEMS OF LINEAR INEQUALITIES

A of linear inequalities is a set of two or more inequalities with two or more .

 of systems of linear inequalities are any ordered pair that satisfies both inequalities (makes both inequalities true).

Tell whether each ordered pair is a solution of the system of linear inequalities.

1. $(6, -8); \begin{cases} x \geq 5 \\ y < -\frac{2}{3}x + 2 \end{cases}$

2. $(3, 8); \begin{cases} 2x - y < 4 \\ y < -x + 3 \end{cases}$

GRAPHING SYSTEMS OF LINEAR INEQUALITIES

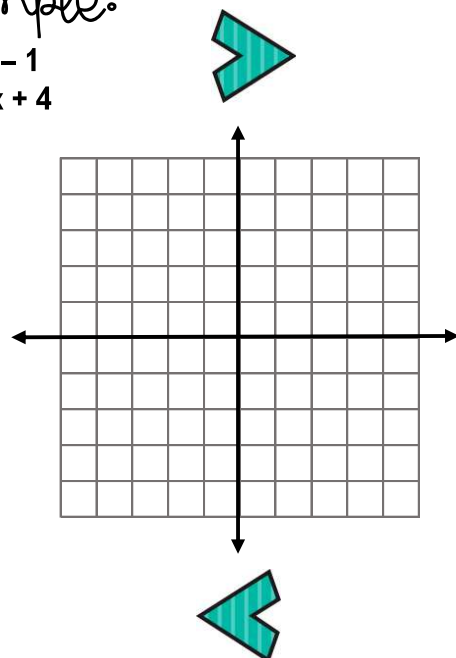
When graphing a system of linear inequalities, we will graph both linear inequalities on the same coordinate plane. The solution set is the overlapping shaded region!

Steps to Graph:

Convert each inequality to slope-intercept form (solve for y) and graph BOTH lines on the same coordinate plane.

Example:

$$\begin{aligned} y &> 3x - 1 \\ y &\leq -2x + 4 \end{aligned}$$

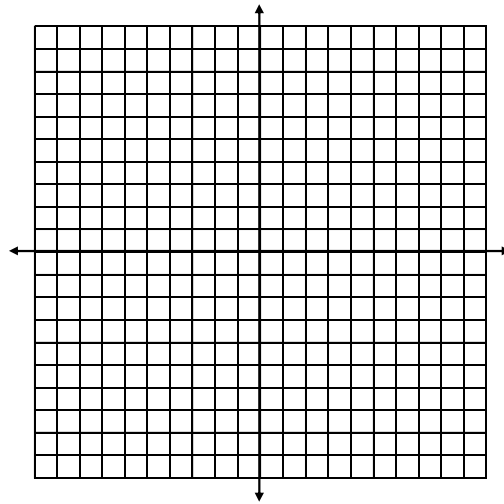


Boundary Lines and Shading:

Line	Solid line for \geq and \leq
	Dotted line for $>$ and $<$
Shading	Shade above for $>$ and \geq
	Shade below for $<$ and \leq

Graph the system of linear inequalities on the coordinate plane provided. Then determine if the ordered pairs given are solutions to the system. Circle yes or no.

3.
$$\begin{cases} y \geq \frac{1}{2}x - 5 \\ y < -4x + 4 \end{cases}$$



Solution?

(-2, 1)

yes no

Solution?

(3, 2)

yes no

Solution?

(2, -4)

yes no

Solution?

(10, -3)

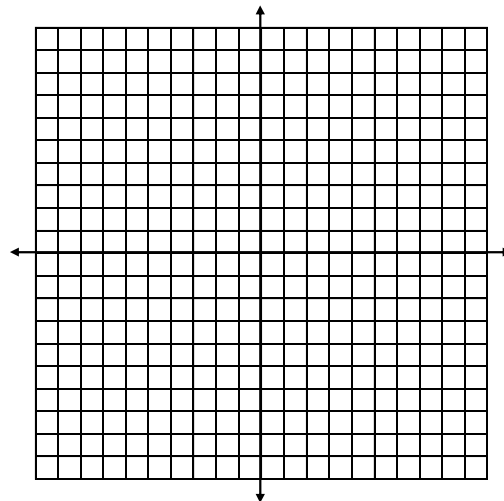
yes no

Solution?

(-2, -6)

yes no

4.
$$\begin{cases} x - y > 2 \\ 3x + y \geq 6 \end{cases}$$



Solution?

(2, 0)

yes no

Solution?

(-3, 5)

yes no

Solution?

(4, -1)

yes no

Solution?

(5, 1)

yes no

Solution?

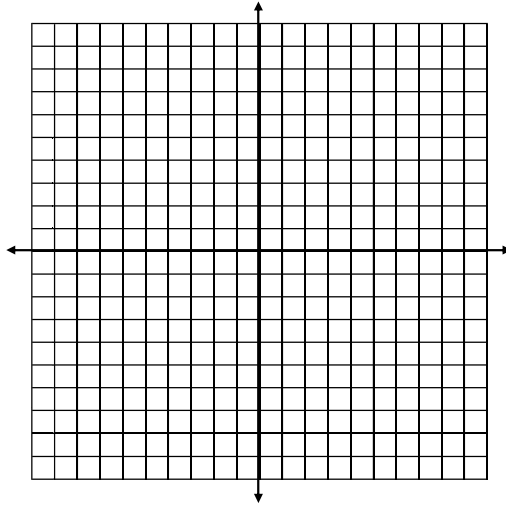
(9, 7)

yes no

A. SYSTEMS OF LINEAR INEQUALITIES

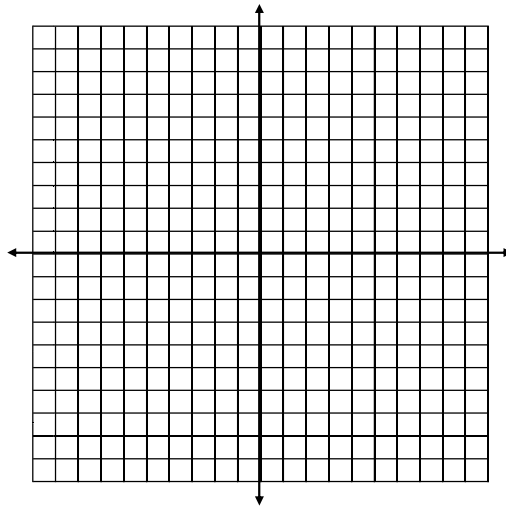
Graph the system of linear inequalities on the coordinate plane provided. Then determine if the ordered pair given is a solution to the system. Circle yes or no.

1.
$$\begin{cases} y \leq -\frac{1}{2}x + 6 \\ y < 4x + 3 \end{cases}$$



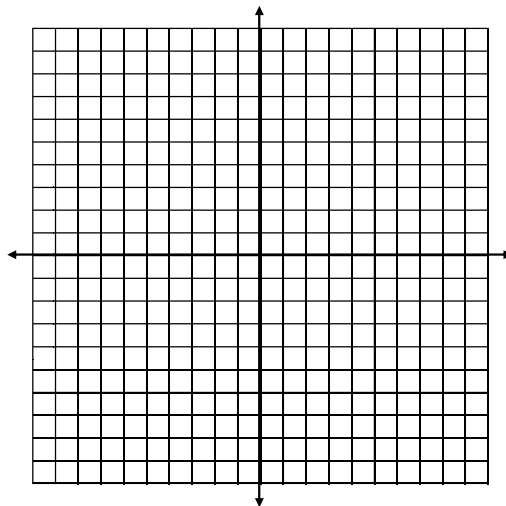
Solution?
 (1, -3)
 yes no

2.
$$\begin{cases} y \leq \frac{2}{3}x + 4 \\ y \geq 3x - 3 \end{cases}$$



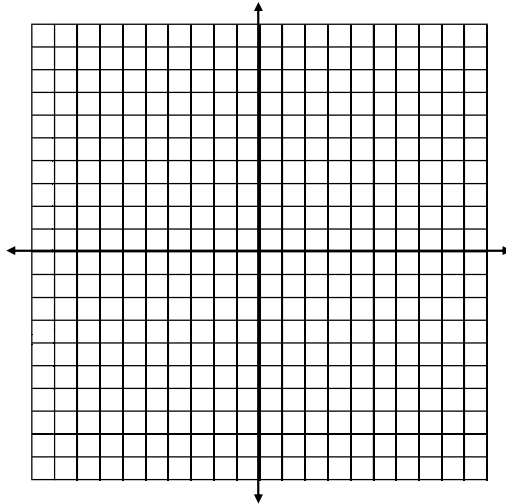
Solution?
 (1, 0)
 yes no

3.
$$\begin{cases} y > x + 6 \\ x - y > 2 \end{cases}$$



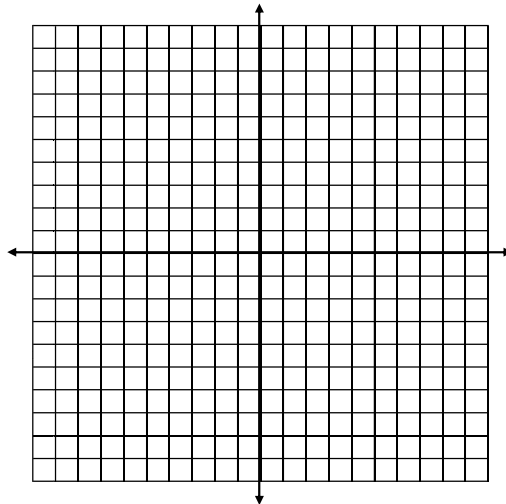
Solution?
 (4, 2)
 yes no

$$4. \begin{cases} 2x + y < 4 \\ 3x - 4y \geq -16 \end{cases}$$



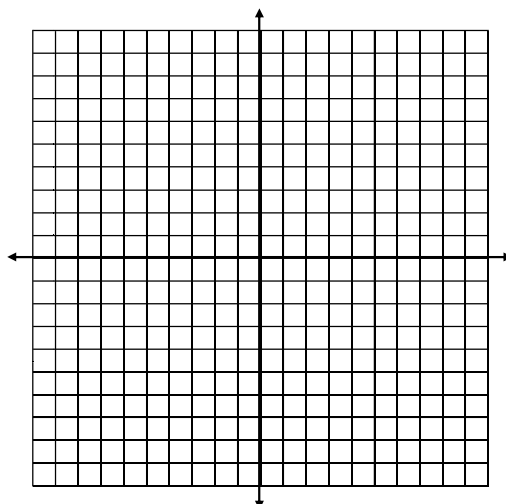
Solution?
 (-5, 4)
 yes no

$$5. \begin{cases} x - 1 < 2 \\ y > 4 \end{cases}$$



Solution?
 (-2, 6)
 yes no

$$6. \begin{cases} 2y \leq 6x + 16 \\ 3x < y + 9 \end{cases}$$



Solution?
 (4, -2)
 yes no