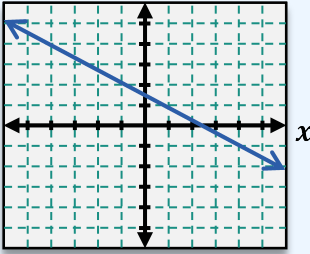
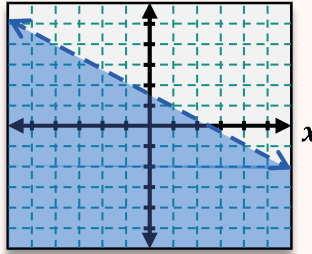


TOPIC: LINEAR INEQUALITIES IN TWO VARIABLES

Intro to Linear Inequalities in Two Variables

◆ Recall: An ordered pair (x, y) is a solution to a 2-variable *equation* if it makes the eqn true when plugged in.

► We can also plug (x, y) into a 2-var *inequality*. If the inequality holds true, the ordered pair ____ a solution.

Recall	Solutions to 2-Var Equations	New	Solutions to 2-Var Inequalities
	Solutions: Points on the LINE $Ax + By = C$ $2x + 3y = 5$  $(4, -1)$: $2(4) + 3(-1) = 5$ $8 + (-3) = 5$ $5 = 5$ ✓ $(2, 4)$: $2(2) + 3(4) = 5$ $4 + 12 = 5$ $16 = 5$ ✗		Solutions: Points in the _____ $Ax + By < C$ $2x + 3y < 5$  $(-1, 0)$: $(5, 3)$:

TOPIC: LINEAR INEQUALITIES IN TWO VARIABLES

PRACTICE

Graph the given linear inequality $4x + \frac{2}{3}y \geq 6$, determine if the following ordered pair is a solution to the inequality.

(A) $(2, 3)$

(B) $(-2, 3)$

(C) $(0, 9)$

PRACTICE

Graph the given linear inequality $4y < 3x - 2$, determine if the following ordered pair is a solution to the inequality.

(A) $(0, -2)$

(B) $\left(3, \frac{3}{4}\right)$

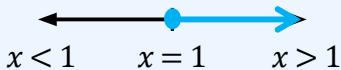
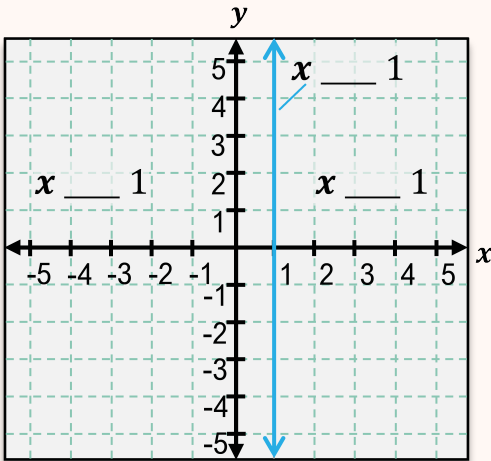
(C) $\left(\frac{2}{3}, \frac{1}{8}\right)$

TOPIC: LINEAR INEQUALITIES IN TWO VARIABLES

Graphing Linear Inequalities in Two Variables

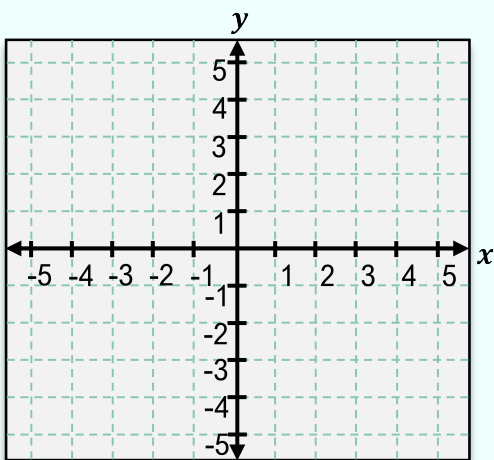
◆ You'll have to plot inequalities on a **2D graph** instead of a **1D number line**.

► To graph an inequality, graph the line and _____ side of graph with points that make inequality _____.

Recall	1D Inequality	New	2D Linear Inequality
	$x \geq 1$ 		$y < x$ $x \geq 1$  For equations with $\geq$ & $\leq$, draw a SOLID line ↗ For equations with $>$ & $<$, draw a DASHED line ↗

EXAMPLE

Graph $y > 2x - 4$



HOW TO: Graph Linear Inequalities

- 1) Graph the solid/dashed line by switching inequality symbol with an ____ sign
- 2) Test a point on either side of line by _____ (x, y) into inequality
(Best to use a point on x or y axis)
- 3) If point makes ineq. [TRUE | FALSE], shade side _____ that point
If point makes ineq. [TRUE | FALSE], shade side _____ that point

◆ Shortcut: Isolate y to left side of inequality, then:

- If $y > \dots$ or $y \geq \dots$ shade [**ABOVE** | **BELOW**] line
- If $y < \dots$ or $y \leq \dots$ shade [**ABOVE** | **BELOW**] line

TOPIC: LINEAR INEQUALITIES IN TWO VARIABLES

EXAMPLE

Match inequality with its graph.

(A)

$$y > -3x + 4$$

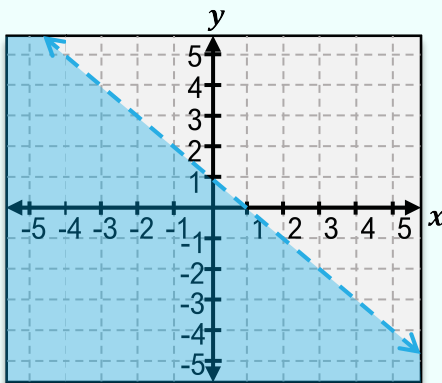
(B)

$$x + y < 1$$

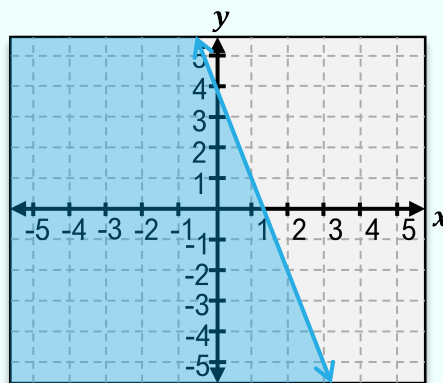
(C)

$$-3x - y \geq -4$$

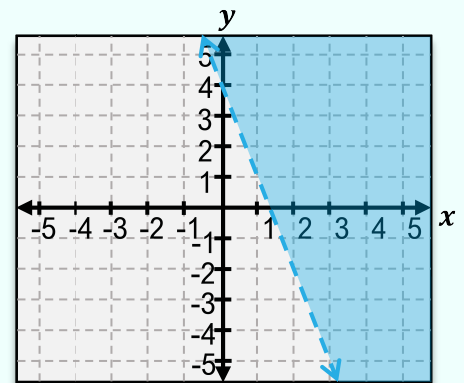
(1)



(2)

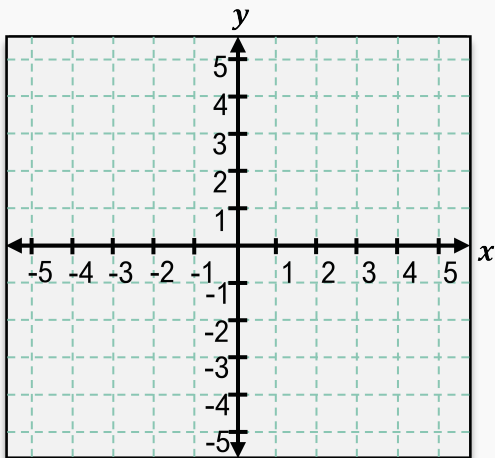


(3)



PRACTICE

Graph the inequality $2x + 3y < 6$.



HOW TO: Graph Linear Inequalities

- 1) Graph the solid/dashed line by switching inequality symbol with an **=** sign
- 2) Test a point on either side of line by plugging (x, y) into inequality
(Best to use a point on x or y axis)
- 3) If point makes ineq. **TRUE**, shade side **WITH** that point
If point makes ineq. **FALSE**, shade side **WITHOUT** that point