Solving a System of Linear Inequalities

Name _____

Date _____ Period _____

System of Inequalities

A system of inequalities is a group of inequalities with the same variables.

$4 + 5 > 5$	$x + y > 5$	$2x + y \geq 3$	$2(2) + -1 \geq 3$
$4 - 5(5) < -7$	$x - 5y < -7$	$3x - 2y \leq 8$	$3(2) - 2(-1) \leq 8$
✓	(4,5)	(2,-1)	✓

The solutions to a system of inequalities are all the (x,y) ordered pairs that satisfy both inequalities

We can solve a system of inequalities by graphing.

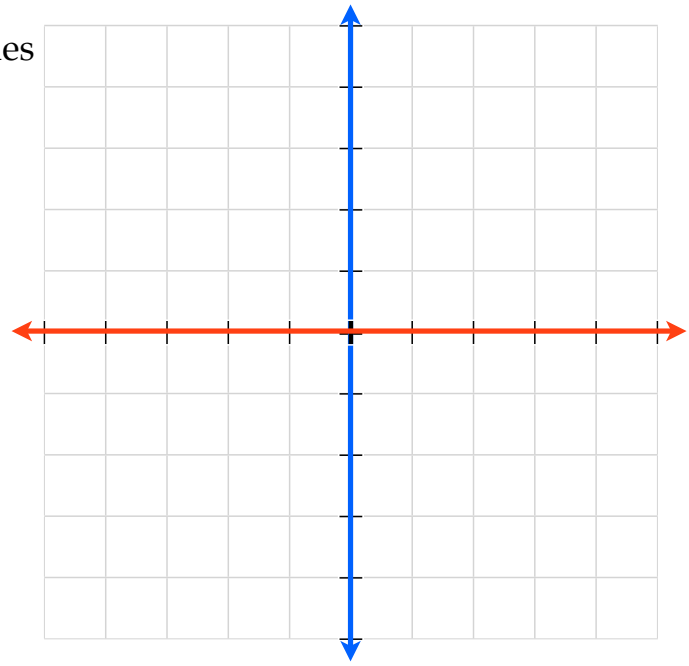
Rules for graphing linear inequalities in slope-intercept form

Solid line or dotted line	Shade above or below line
$y <$ *or* $y >$ ⇒ dotted line	$y >$ *or* $y \geq$ ⇒ shade above line
$y \leq$ *or* $y \geq$ ⇒ solid line	$y <$ *or* $y \leq$ ⇒ shade below line

Solve the following system of linear inequalities

Solid or Dotted Above or Below

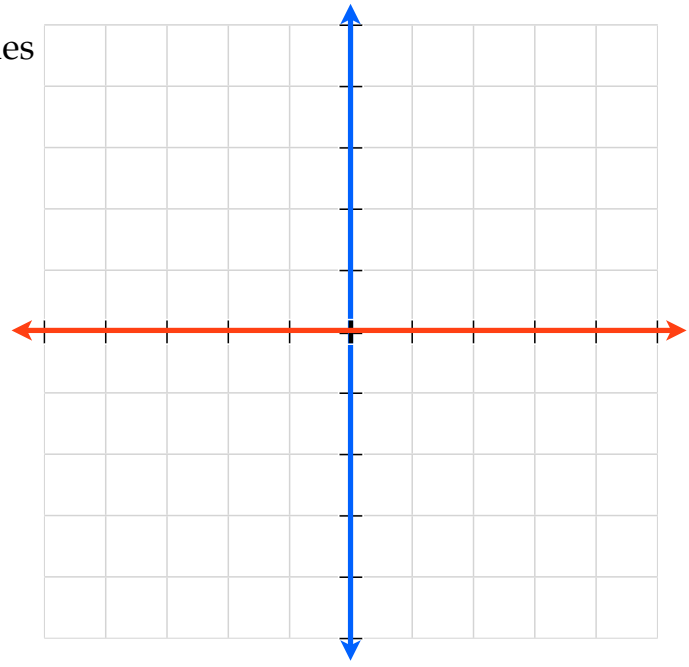
$y > 2x - 2$ $y < -x + 1$



Solve the following system of linear inequalities

Solid or Dotted Above or Below

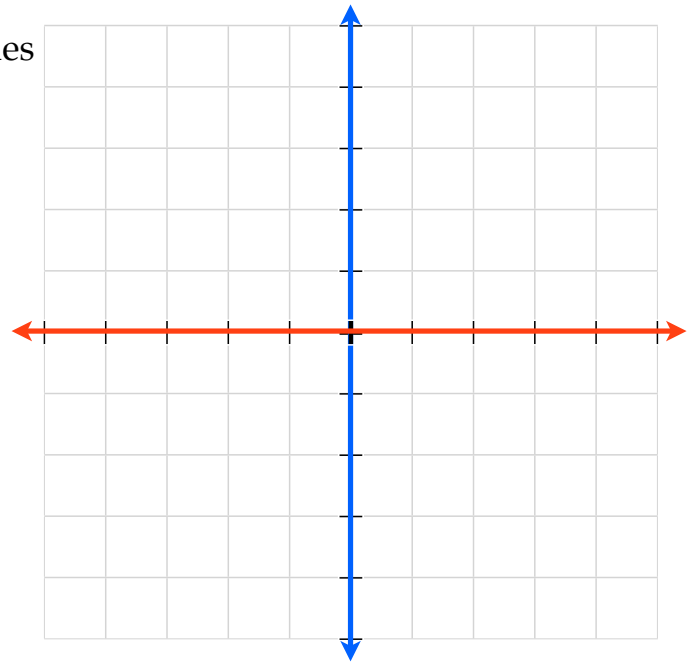
$y \leq \frac{3}{2}x - 4$ $y \leq -\frac{1}{4}x + 2$



Solve the following system of linear inequalities

Solid or Dotted Above or Below

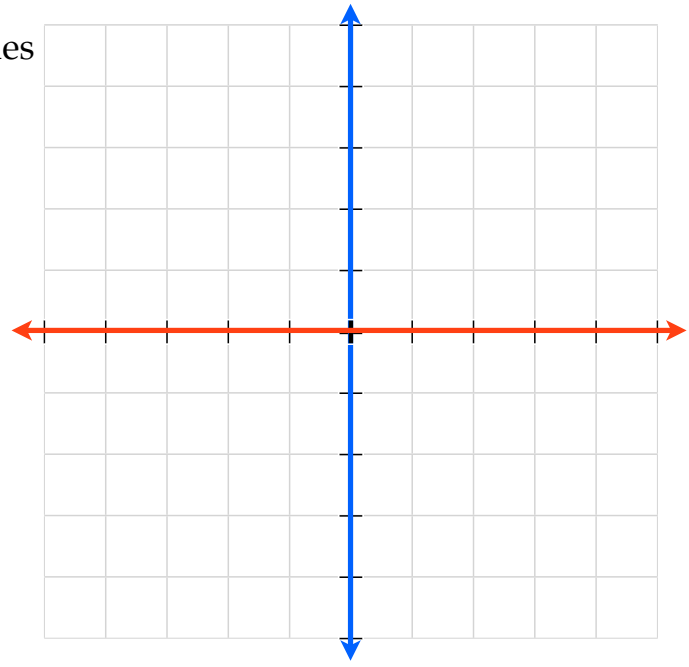
$y > 2$ $x > -3$



Solve the following system of linear inequalities

Solid or Dotted Above or Below

$2x + y \leq 2$ $x - y \geq -2$



Rules for graphing linear inequalities in slope-intercept form

Solid line or dotted line

$y <$ *or* $y >$ $\Rightarrow$ dotted line

$y \leq$ *or* $y \geq$ $\Rightarrow$ solid line

Shade above or below line

$y >$ *or* $y \geq$ $\Rightarrow$ shade above line

$y <$ *or* $y \leq$ $\Rightarrow$ shade below line