

Algebra 1 - Unit 7

Graphing Linear Inequalities - NOTES

A system of linear inequalities consists of **TWO or more** linear inequalities.

The solution to a system of linear inequalities is **an ordered pair that is a solution to ALL inequalities in the system**. It can be any ordered pair where the shading from the inequalities overlap.

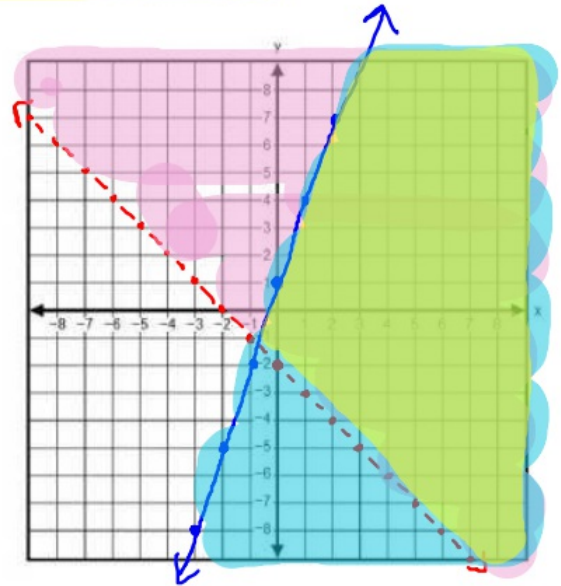
① $y > -x - 2$

② $y \leq 3x + 1$

$0 \leq 3(0) + 1$

$0 \leq 1$

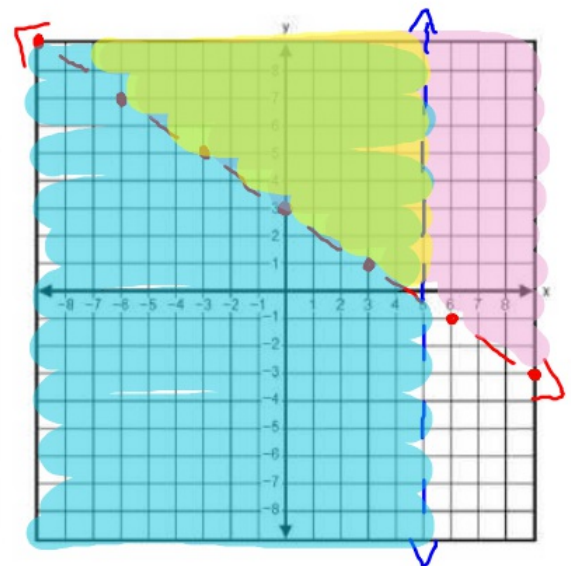
	Inequality 1	Inequality 2
y-intercept	$(0, -2)$	$(0, 1)$
Slope	-1	$3 \frac{3}{1}$
Dashed or solid	dashed	solid
Test point	$(0, 0)$	$(0, 0)$



① $y > -\frac{2}{3}x + 3$

② $x < 5$

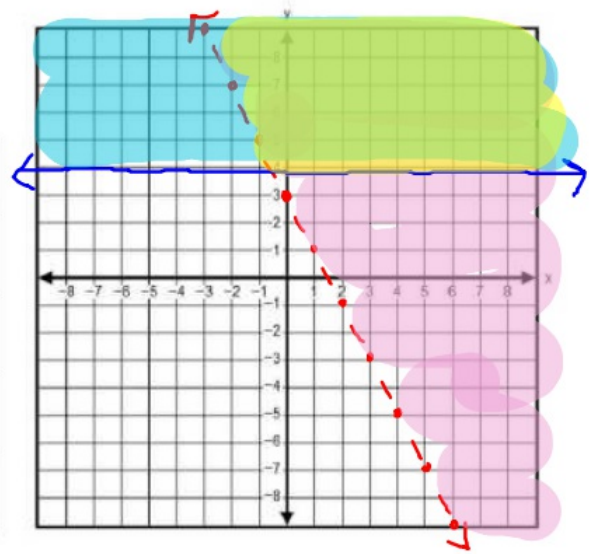
	Inequality 1	Inequality 2
y-intercept	$(0, 3)$	—
Slope	$-\frac{2}{3}$	und
Dashed or solid	dashed	dashed
Test point	$(0, 0)$	$(0, 0)$



① $y > -2x + 3$

② $y \geq 4$

	Inequality 1	Inequality 2
y-intercept	(0,3)	(0,4)
Slope	-2	0
Dashed or solid	dashed	solid
Test point	(0,0)	(0,0)



Determining if a given point is a solution to a system of inequalities.

Algebraically	Given a graph
<p>Plug the x and y values from the point into each inequality. If the values produce a true statement for both inequalities, then the point is a solution to the system of inequalities.</p> <p style="text-align: center;">$x \quad y$</p> <p>Determine if (5, 7) is a solution to the following system of inequalities:</p> $x + y > 5$ $2x - y < 4$ $5 + 7 > 5 \quad 2(5) - (7) < 4$ $12 > 5 \quad 10 - 7 < 4$ $\checkmark \quad 3 < 4$ \checkmark <p style="text-align: center; font-size: 2em;">yes</p>	<p>If the point is in the overlapping shaded area, the point is a solution to the system of inequalities.</p> <p>Circle the points that are solutions to the system graphed above.</p> <p>(2, 0) (0, 6) (5, 1) (-3, 3)</p> <p>(3, 5) (2, -1) (-2, 8) (5, 7)</p>