

Graphing Linear Inequalities in Two Variables

We learned how to graph linear inequalities in one variable by graphing on a number line. Now, let's look at graphing linear inequalities in two variables, x and y .

Steps to take to graph a linear inequality in two variables:

- 1) Write the corresponding equation in slope-intercept form.
- 2) Graph the line using the y -intercept and the slope. This line will separate the coordinate plane into two half-regions.

Use a dashed line for inequalities with > or < to show that the points on the line are not solutions.

Use a solid line for inequalities with ≥ or ≤ to show that the points on the line are solutions.

- 3) Next you need to shade on one side of the line or the other. To decide which side, use a test point. Use $(0,0)$ if it is not on the line. Choose another point if $(0,0)$ is on the line.

If the test point is a solution, then shade the half plane it is in. If the test point is not a solution, then shade the other half-plane.

***Keep in mind:** The inequality you graph is going to be in the form: $y <$, $y >$, $y \leq$, or $y \geq$. So, if you want values of y that are greater than those on the line, you will have to include the larger y values in your shaded region. If you want values of y that are less than those on the line, you will have to include the smaller y values in your shaded region. This means that you are either including the top portion of the y -axis or the bottom portion of the y -axis.

Graphing Linear Inequalities Practice Worksheet A

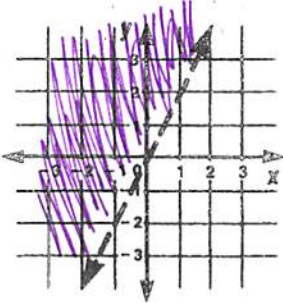
Name _____

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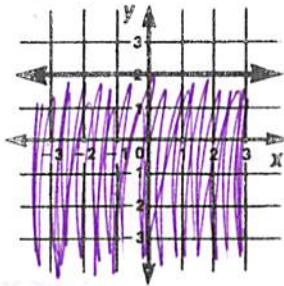
Graphing Inequalities in Two Variables

Determine which half-plane is the graph of each inequality.

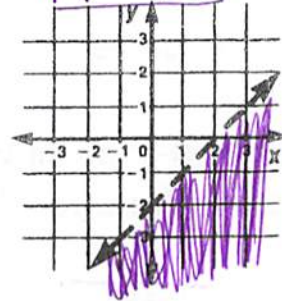
1. $y > 2x$



2. $y \leq 2$



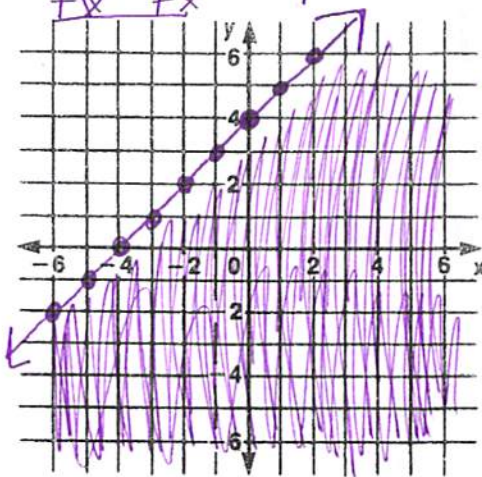
3. $y - x < -2$



dashed
 $y < x - 2$

Graph each inequality.

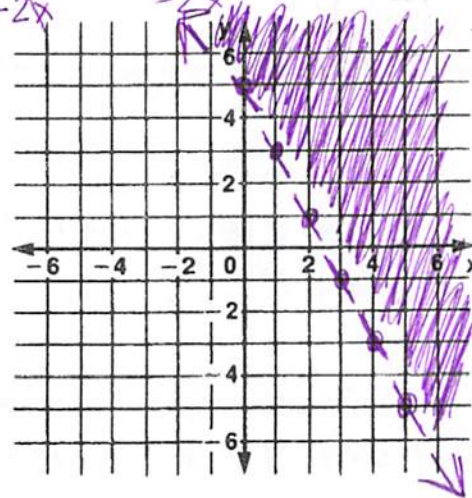
4. $y - x \leq 4$



$y \leq x + 4$

slope: 1
 yint: 4
 solid

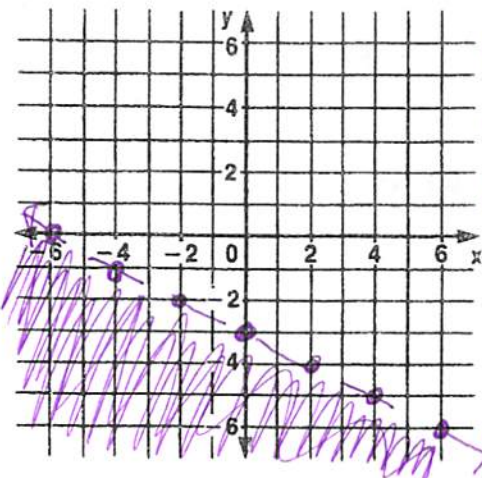
5. $2x + y > 5$



$y > -2x + 5$

slope: -2
 yint: 5
 dashed

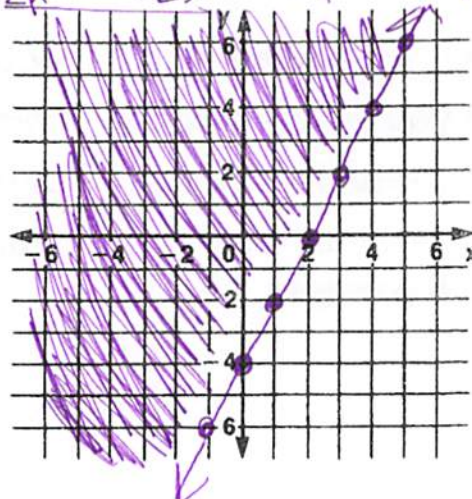
6. $x + 2y < -6$



$y < -\frac{1}{2}x - 3$

slope: $-\frac{1}{2}$
 yint: -3
 dashed

7. $2x - y \leq 4$



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

$y \geq 2x - 4$
 slope: 2
 yint: -4
 solid