

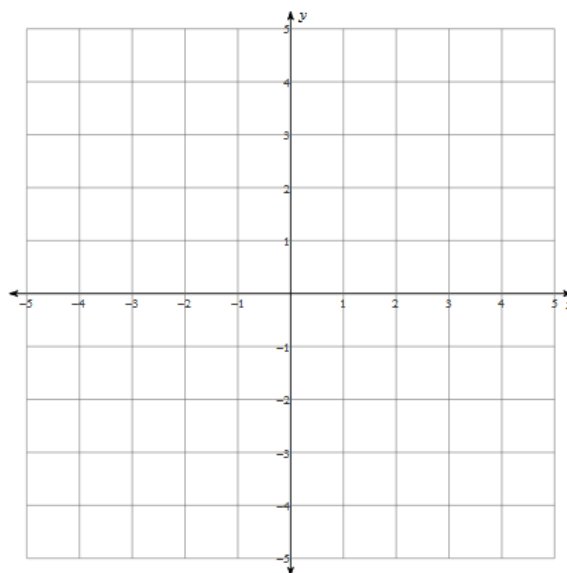
Investigation:

Graphing Linear Inequalities in Two Variables

Consider the linear inequality: $y \geq -x + 3$

1. With a partner, use substitution to test ordered pairs (x, y) to determine whether or not they are solutions to the inequality. Restrict your trials to ordered pairs that have integer coordinates and can be found on the grid shown below. List only the ordered pairs that are solutions. See if you can find all thirty-six.

2. Plot the ordered pairs from # 1 on the grid provided. What do you notice?



3. If you wanted to plot *all* possible solutions (that is, x and y can be *real* numbers, not just integers) on the grid, what would the solution region look like? Show this on the grid above.
4. Determine the equation of the boundary between solutions and non-solutions. What do you notice?
5. How could the direction of the inequality sign in this case (\geq) help you determine which side of the boundary the solutions will be on?
6. Would the solution region look any different if the inequality was $y > -x + 3$? Explain.
Would the solution region look any different if the inequality was $y < -x + 3$? Explain.