

Part 1: Number Line (one variable)

- Write down three values of x that are represented by the inequality:
 - $x > 4$
 - $x \leq 2$
 - $1 < x \leq 3$
- Describe the differences between the set of numbers represented by the inequality $1 < x < 3$ and the inequality $1 \leq x \leq 3$. How do you show those differences on a number line?
- Describe the differences between the set of numbers represented by the inequality $1 \leq x \leq 3$ and the inequalities $x \geq 1$, $x \leq 3$.
- Describe the differences between the set of numbers represented by the inequality $1 \leq x \leq 3$ and the inequalities $x < 1$, $x > 3$. How do you show those differences on a number line?

Part 2: Coordinate Plane (two variable)

- Write down three solutions, in the form (x, y) , to the equation $y = 2x + 1$.
- Are these coordinate points also solutions to the inequality $y > 2x + 1$? Explain why or why not.
- Are the solutions from Question #6 solutions to the inequality $y \geq 2x + 1$? Explain why or why not.
- Describe the differences between the set of solutions to the inequality $y > 2x + 1$ and the inequality $y \geq 2x + 1$. How do you show those differences on a graph?
- Describe the differences between the set solutions to the inequality $y \geq 2x + 1$ and the inequality $y < 2x + 1$. How do you show those differences on a graph?
- Describe the differences between the set of solutions to the inequality $y \geq 2x + 1$ and the inequality $2x + 1 \leq y \leq 2x + 3$. How do you show those differences on a graph?

Part 3: Extension

- Consider the inequality $x^2 < 9$. How could you represent this inequality using x rather than x^2 . In other words, how could you write an inequality similar to the ones shown in Part 1 that would represent the same solutions as $x^2 < 9$?
- Consider the inequality $(x - 1)(x - 4) \geq 0$. How could you write an inequality similar to the ones shown in Part 1 that would represent the same solutions as $(x - 1)(x - 4) \geq 0$?
- Describe the differences between the solutions to the inequality $y > x^2$ and the inequality $y \leq x^2$. How do you show those differences on a graph?