

LINEAR INEQUALITIES Guide Notes

LINEAR INEQUALITY: Looks exactly like a linear function, with the inequality sign replacing the equality sign. Inequalities are useful for describing real- world situations. The symbols used in inequalities are: $<$, $>$, \leq , \geq

INTERVAL NOTATION We write the beginning and ending numbers of the interval, like follows:

- Use $[-]$ for closed dots \geq, \leq
- Use $(-)$ for open dots $>, <$

SET NOTATION Represents a form to describe which items belong in a set and which do not.

$$\{x|x \in R, x < a\} = (-\infty, a)$$

$$\{x|x \in R, x > a\} = (a, \infty)$$

$$\{x|x \in R, x \leq a\} = (-\infty, a]$$

$$\{x|x \in R, x \geq a\} = [a, \infty)$$

$$\{x|x \in R, a \leq x \leq b\} = [a, b]$$

$$\{x|x \in R, a < x \leq b\} = (a, b]$$

$$\{x|x \in R, a \leq x < b\} = [a, b)$$

$$\{x|x \in R, a < x < b\} = (a, b)$$

Express the following intervals as sets

1. $[-5, 8]$
2. $(0, 6]$
3. $(-4, \infty)$

Express the following sets as intervals

4. $\{x|x \in R, x \geq 2\}$
5. $\{x|x \in R, -4 \leq x < 3\}$
6. $\{x|x \in R, x < 7\}$

Name: _____ Period: _____ Date: _____

LINEAR INEQUALITIES Guide Notes

Sample Problem 1: Solve the following inequality:

$$6(x + 1) > 2(x - 5)$$

Sample Problem 2: Solve the following inequality:

$$\frac{5x - 8}{4} \leq 3$$

Sample Problem 3: Graph the solutions of the following inequalities:

- $x < 4$
- $x \geq 0$
- $2 \leq x < 6$