

Introduction to Inequalities Activity Sheet

Goal 1: Reading Inequalities

Step 1: Exploration

1. What are different ways to create a balanced relationship without using identical objects on each side? Give some examples.
2. Which object is the lightest?
3. List your shapes in order from lightest to heaviest.
4. What does $<$ mean? $>$?
5. Hypothesize (guess) what \leq and \geq mean.

Goal 1: Reading Inequalities

Step 2: Numbers Activity

Write the inequality you created for reference. _____

1. As you create your inequality, what do you see happening on the screen?
2. Add or subtract the same number to both sides of your inequality. What happens?
3. How can you make the symbol change direction?

Goal 2: Writing Inequalities

A. Write the mathematical sentence in words.

Example: $x > 5$ x is greater than 5

$6 < 10$: _____

$y > x$: _____

$z \geq 24$: _____

$d \leq 36$: _____

***Challenge:** $4 < x < 6$: _____

B. Write the mathematical sentence using symbols.

Example: x is greater than or equal to 15. $x \geq 15$

4 is less than 10: _____

z is greater than 4: _____

x is less than 26: _____

***Challenge:** a is greater than 56, but less than 75.: _____

Goal 3: Graphing Inequalities

Step 1: Variables Activity

State the inequality you created for reference. _____

1. What changes occur when you toggle the value of x up and down?
2. Is there a point at which the symbol won't change direction? How does this relate to our discussion of solutions?
3. Hypothesize how we could write, or draw, all of the numbers that could be solutions for your original inequality.

Goal 4: Identifying If a Value is a Solution of an Inequality

1. How can you use the sim to determine if -3 is a solution to the inequality $2x+1<3$?
2. Identify if the following values are solutions to the inequality $\{-4, -1, 0, 5, 10\}$.
3. What is the value of x that will make the inequality into an equation?
4. What happens to the inequality symbol when you toggle above and below the value from step 3?
5. How does this relate to graphing inequalities? Can you graph the solution set for this inequality, if so, do so here.
6. Using a formal model, and what you know about checking solutions for equations, manually check if the given values are solutions to the following inequality.

$$-3x - 4 > 5 ; \{-2, 0, 7\}$$

