

Core Content

Cluster Title: Reason about and solve one-variable equations and inequalities.

Standard 8: Write an inequality of the form $x > c$ or $x < c$ to represent a constraint or condition in a real-world or mathematical problem. Recognize that inequalities of the form $x > c$ or $x < c$ have infinitely many solutions; represent solutions of such inequalities on number line diagrams.

MASTERY Patterns of Reasoning**Conceptual:**

- Recognize that infinity refers to a set of numbers that has no end, but may not include all numbers.
- Recognize that a variable can stand for an infinite number of solutions when used in inequalities.
- Recognize that a constraint or a condition in an inequality refers to the boundary defined in the solution set.

Procedural:

Write an inequality that represents real-world mathematical problems containing a constraint or a condition ($<$, $>$).

Representational:

Represent inequalities on a number line. Add graphic to clarify.

Supports for Teachers

Critical Background Knowledge**Conceptual:**

- Understand the meanings of equality and inequality.
- Recognize that a variable can stand for a number.

Procedural:

Write an inequality of the form $x > c$ or $c > x$ where x and c are rational numbers.

Representational:

Represent numbers on a number line.

Academic Vocabulary and Notation	
<p>>, <, inequality, infinite, greater than, less than</p>	
Instructional Strategies Used	Resources Used
<ol style="list-style-type: none"> 1. Ask a question for which there are an infinite number of solutions (e.g., What are all the numbers greater than 1?). Guide students to represent that as $n > 1$. 2. Present real-world mathematical situations where it is apparent that multiple answers will make an inequality true (e.g., freezing occurs at 32°F. How cold could your freezer be if you have ice cubes?) 3. Represent real-world mathematical problems on a number line with students. Place an open circle on the number that is in the inequality on the number line, then draw an arrow to indicate the direction of all possible solutions. 	<p>http://fcit.usf.edu/math/lessons/activities/HumanPT.htm – adjust for inequalities</p> <p>http://www.education.com/activity/article/tic-tac-equations/</p>
<p>Extension: Tic-Tac-Toe Math</p>	
Assessment Tasks Used	
<p>Skill-based Task: Represent the solution to each inequality on a number line. $n > 0$ $n < 5$ $n > 3/4$ $n < -1.5$</p>	<p>Problem Task: Water boils at 100°C. Write an inequality that represents all the temperatures at which water does not boil. Represent the solution on a number line.</p>