

Core Content

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

Standard 5: Understand solving an equation or inequality as a process of answering a question: which values from a specified set, if any, make the equation or inequality true? Use substitution to determine whether a given number in a specified set makes an equation or inequality true.

MASTERY Patterns of Reasoning**Conceptual:**

Understand the differences between equations and inequalities.

Know that inequalities represent a range of possible values rather than a single solution.

Procedural:

Simplify numerical expressions by substituting values for given variables.

Use substitution to determine whether a given number in a specified set makes an equation or inequality true.

Representational:

Model solutions for equations and inequalities with manipulatives, graphs, diagrams or story contexts.

Supports for Teachers

Critical Background Knowledge**Conceptual:**

Know variables can be replaced with numbers.

Understand that for an equation to be true, expressions on either side of the equal sign must be equivalent.

Procedural:

Substitute values for given variables.

Representational:

Model equations and inequalities that do not involve operations (e.g., $3 < 5$, $x > 7$, $y = 6$).

Academic Vocabulary and Notation	
>, <, equality, inequality, solution, substitution	
Instructional Strategies Used	Resources Used
Using a pan balance, put a bag with an unknown number of blocks and up to 10 visible blocks on one pan. Have them balance the scale by adding as many blocks as needed on the other pan. What equation is shown? Then have the students remove a block at a time from each pan to determine how many blocks are in the bag. What number makes the equation true? How do you know? Repeat the process using another bag.	<p>Illustrations (NCTM website): “Everything Balances Out In the End” (Lesson 2: Balancing Algebraic Understanding). Algebra Tiles</p> <p>UEN: Evaluating Expressions Using Tiles</p> <p>http://nlvm.usu.edu/en/nav/frames_asid_201_g_3_t_2.html?open=instructions&from=category_g_3_t_2.html</p>
Assessment Tasks Used	
<p>Skill-based Task:</p> <p>For the inequality $4x > 16$, which of the following numbers (2, 4, 6, 8) makes it true? Explain your answer.</p> <p>Will the solution to $x - 5 = 34$ be greater than or less than 34? Explain.</p>	<p>Problem Task:</p> <p>Keith has \$500 in a savings account at the beginning of the summer. He wants to have at least \$200 in the account by the end of the summer. He withdraws \$25 each week for food and fun.</p> <ul style="list-style-type: none"> • Write an inequality that represents Keith’s situation. • How many weeks can Keith withdraw money from his account?