Core Content

Cluster Title: Understand the place value system.

Standard 1: Recognize that in a multi-digit number, a digit in one place represents 10 times as much as it represents in the place to its right and 1/10 of what it represents in the place to its left.

MASTERY Patterns of Reasoning:

Conceptual:

Students will recognize relationships between digits in multi-digit numbers by multiples of 10. For example, the value of 4 in 746 is four tens or 40; the value of 4 in 984 is four ones; the value of 4 in 0.46 is four tenths.

Procedural:

Students can determine the value of a digit when multiplied or divided by 10. For example 6 x 10 = 60 and 6,000 ÷ 10 = 600 (dividing by 10 yields the same result as multiplying by 1/10).

Representational:

Students can model the place value of a digit using a number-line, base ten blocks, and drawings. For example, the number 19 can be represented as nineteen ones or 190 tenths.

Supports for Teachers

Critical Background Knowledge

Conceptual:

Students will know the names and position of each place value.
Students understand the value of each digit in the base 10 system.
Students will know that the value of a digit within a number increases or decreases when multiplied or divided by ten in the base ten system.

Procedural:

Students will be able to read and name the place value of digits in multi-digit numbers including decimals to the hundredths place.
Students can multiply by 10.
Students can divide by 10.

Representational:

Students can make number line representations of numbers, including decimal values.
Students can model whole numbers and parts of whole numbers with drawings, base ten blocks, and other concrete models.

Academic Vocabulary and Notation

base ten system, decimal, names of the place values, tenth, hundredth, thousandth

Instructional Strategies Used	Resources Used
Have students find the difference in place value between the 2 in 542 and the 2 in 324. What is the difference in place value between the 2 in 324 and the 2 in 0.324? Have students explain how to represent the 2 in 542 differently than the 2 in 324, and to represent the 2 in 324 differently than the 2 in 0.324. Students can use base ten blocks or pictorial representations. Use a virtual manipulative to work with number lines involving decimal values.	National Library of Virtual Manipulatives, number line with decimals. http://nlvm.usu.edu/en/nav/frames_asid_334_g_2_t_1.html?from=category_g_2_t_1.html

Assessment Tasks Used	
Skill-Based Task: How many tenths are in 2.5? How much larger is 200 than 20? How much smaller is 0.3 than 3?	**Problem Task:** Using base-ten blocks, show at least two ways to represent the number 3.2. For example, use a flat as a unit, a stick as 1/10 and a single as 1/100. Show the difference between the 3 in 83.7 and the 3 in 8.37.