Core Content

Cluster Title: Generalize place value understanding for multi-digit whole numbers.
Standard 1: Recognize that in a multi-digit whole number, a digit in one place represents ten times what it represents in the place to its right. For example, recognize that 700 ÷ 70 = 10 by applying concepts of place value and division.
MASTERY Patterns of Reasoning:

Conceptual:
> Students will understand the places of numbers and the value of each place.
> Students will understand that each place increases by ten times the prior place moving to the left.
> Students will understand that moving to the right is decreasing the value by tens using an inverse operation.
> Students will understand why the procedures work based on place value and properties of operations.

Procedural:
> Students can multiply and divide numbers by multiples of tens, hundreds, thousands, etc. to one million (e.g., 70 x 100 = 7,000; 5,000 x 10 = 50,000 and 700 ÷ 70 = 10; 50,000 ÷ 50 = 1,000).
> Students can explain why multiplication and division work based on place value and properties of operations.

Representational:
> Students can model place and value relationships showing how a digit in one place represents ten times what it represents in the place to its right using manipulatives (e.g., place value blocks, mats, discs, etc.).

Supports for Teachers

Critical Background Knowledge

Conceptual:
> Students will understand the place of each digit and the value of its place.
> Students will understand that multiplication and division are inverse operations.

Procedural:
> Students can multiply and divide within 100.
> Students can multiply by multiples of 10.

Code: 4.NBT.1

Representational:
Students can model place value using manipulatives (e.g., place value blocks, mats, discs, etc.). Students can represent multiplication and division using arrays, objects, drawings, etc. Students can show how the multiplication and division facts are related using models.

Academic Vocabulary and Notation
inverse operation, base ten numeral (instead of standard form), value, place, and place value, digit

Instructional Strategies Used	**Resources Used**
Have students investigate the patterns associated with the answers obtained with calculators to problems such as the following. (They should relate their findings to the patterns on the place value chart.) 7 x 10 7 x 100 70 ÷ 10 7 x 1,000 700 ÷ 10 7 x 10,000 7,000 ÷ 10	Calculators, papers, pencils, place value chart

Assessment Tasks Used	
Skill-Based Task: 800 ÷ 80 = 3,000 ÷ 100 = 500,000 ÷ 5,000 = 500 equals how many tens? 6,000 equals how many hundreds?	**Problem Task:** Given two numbers (e.g., 2,000 and 20) explain the relationship between the numbers, digits, places, and values.

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