

# Oklahoma Elementary Mathematics Specialist Certification (OEMS)

## A Certification Process

### Section 2: Competencies

#### **DOMAIN I: Number Concepts and Operations: Content, Instruction, and Assessment**

**Competency 001:** The OEMS understands the structure of number systems, student's development of a sense of quantity, and the relationship between quantity and symbolic representations.

- A. Analyzes the structure of numeration systems and the roles of place value and zero in multiple base systems.
- B. Analyzes and differentiates a variety of models that student will use to represent numbers (e.g., patterns, sets, number lines, base ten blocks, diagrams, shaded regions, fraction strips).
- C. Compares and contrasts different representations of equivalent rational numbers.
- D. Explains and applies models to show how some situations have no solution and/or multiple solutions in the real number system.
- E. Explains and applies students' sense of quantity and estimation for the real numbers and the relationship between quantity and estimation.
- F. Analyzes pre-number concepts and connects those concepts to number systems including non-quantified comparisons (less than, greater than, equal), containment (e.g., 5 contains 3), 1-to-1 correspondence, cardinality, ordinality.
- G. Compares and contrasts numeration systems (additive, multiplicative, ciphered, positional-place value).
- H. Compares and contrasts multiple representations of numbers in real-world situations.
- I. Compares and contrasts the characteristics of the sets of whole numbers, integers, rational numbers, real numbers and complex numbers (e.g., properties of operations, inverse elements, density) so that student's instruction is both developmentally appropriate and vertically aligned.

**Competency 002:** The OEMS understands number operations and computational algorithms, and students' development of these concepts with a goal of computational fluency.

- A. Analyzes, justifies, and connects relationships among number properties and a variety of algorithms involving the basic operations with real numbers and complex numbers.