

# MAJOR WORK OF THE CCR STANDARDS FOR MATHEMATICS LEVELS (MATH TOOL 4)

## Level A (ABE Level 1)

### Number and Operations

- Developing understanding of whole number place value for tens and ones
- Developing understanding of addition and subtraction and the properties of these operations

### Algebraic Thinking and Functions

- Developing initial understanding of equation, variable and the meaning of the equal sign

### Geometry and Measurement

- Describing and reasoning about shapes and their attributes
- Developing understanding of linear measurement

### Data, Statistics and Probability

- Organizing, representing, and interpreting simple categorical data

## Level B (ABE Level 2)

### Number and Operations

- Extending understanding of base-10 notation
- Adding and subtracting to 1,000; fluency to 100
- Understanding multiplication and division of whole numbers to 100
- Understanding division as inverse of multiplication; single-digit divisors
- Developing understanding of fractions, especially unit fractions

### Algebraic Thinking and Functions

- Identifying and explaining patterns in arithmetic

### Geometry and Measurement

- Using standard units for linear measurement
- Developing understanding of area and its relationship to addition and multiplication
- Analyzing two-dimensional shapes

### Data, Statistics and Probability

- Beginning understanding of scaling picture and bar graphs

## Level C (ABE Level 3)

### Number and Operations

- Extending the number system to positive rational numbers
- Extending place value understanding to decimals
- Attaining fluency with multi-digit operations using whole numbers and decimals
- Understanding fraction equivalence and comparison
- Developing fluency with sums and differences of fractions
- Connecting ratio and rate to whole number multiplication and division

### Algebraic Thinking and Functions

- Writing, evaluating, and interpreting expressions and equations

### Geometry and Measurement

- Developing understanding of the coordinate plane
- Classifying two-dimensional shapes based on sides and angles
- Developing an understanding of volume and surface area

## **Data, Statistics and Probability**

- Developing understanding of statistical variability and measures of center and distribution

## **Level D (ABE Level 4)**

### **Number and Operations**

- Extending number sense and fluent operations to all rational numbers, including negatives

### **Algebraic Thinking and Functions**

- Understanding ratio and rate and using them to solve problems
- Applying proportional relationships
- Working with expressions and linear equations
- Solving linear equations and systems of linear equations
- Developing the concept of function
- Graphing functions in the coordinate plane and analyzing their graphs

### **Geometry and Measurement**

- Classifying geometric figures based on properties
- Solving problems involving scale drawings
- Measuring two- and three-dimensional figures: area, surface area, and volume
- Analyzing two- and three-dimensional shapes using distance and angle measurements, similarity, and congruence
- Applying the Pythagorean theorem

## **Data, Statistics and Probability**

- Understanding patterns of association for bivariate data and describing them with a linear equation when appropriate
- Summarizing data and data distributions
- Drawing inferences about populations based on random samples (probability distributions)

## **Level E (ABE Levels 5 and 6)**

### **Number and Operations**

- Extending understanding of number systems to the set of real numbers
- Writing equivalent expressions involving radicals and integer exponents
- Reasoning quantitatively through the use of units and appropriate levels of precision

### **Algebraic Thinking and Functions**

- Defining, evaluating, comparing, and modeling with linear, quadratic, and exponential functions and equations
- Building, interpreting, and analyzing functions using correct notation
- Reasoning with and solving linear, quadratic, and exponential equations and linear inequalities
- Interpreting and using the structure of expressions to solve problems
- Operating with algebraic expressions, including polynomials and rational expressions

### **Geometry and Measurement**

- Applying similarity and congruence concepts to geometric figures, including right triangles
- Using geometric models to solve measurement problems involving volume

## **Data, Statistics and Probability**

- Summarizing, describing, displaying, and interpreting data
- Understanding and applying probability concepts
- Summarizing, representing, and interpreting one- and two-variable data, including using frequency tables