NC SIP Math Foundations Crosswalk

The course goals and competencies of the North Carolina State Improvement Project (NCSIP) Foundations of Mathematics Training (MFT) are strongly aligned to the concepts and skills in the Math K–12 Common Core State Standards (CCSS). This crosswalk is designed as a resource to inform educators about how the Foundations of Mathematics course aligns with the CCSS and NC Teacher Evaluation System standards. The purpose of the Foundations of Math course is to provide teachers with an understanding of the instructional principles derived from scientific-based research and a solid foundation of knowledge and skills to begin using research-proven teaching strategies with students with disabilities who have persistent mathematical problems. In doing so, the course emphasizes the Standards for Mathematical Practices so that teachers begin or continue developing the varieties of expertise they, in turn, will develop in their own students.

Common Core State Standards Initiative
Standards for Mathematical Practice

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.

http//www.corestandards.org/the-standards/mathematics/introduction/standards-for-mathematical-practice/

Math Foundations Training Unit Alignment		Common Core Math Standards Kindergarten
Unit 2-Counting Principles Unit 4-Components of Number Sense Unit 5-The Number Line; different forms of a number line; subitizing; quantity & magnitude; numeration	**Counting & Cardinality**	* Know numbers and the count sequence * Count to tell number of objects * Compare numbers
Unit 3- Problem #1; equal exchanges; composing/decomposing; structures of addition/subtraction; Unit 4-Components of Number Sense Unit 5-Structures of addition/subtraction; numeration Unit 6-Base tens; form of a number	**Operations & Algebraic Thinking**	* Understand addition as putting together and adding to, and understand subtraction as taking apart and taking from
Unit 3-Base tens; equal exchanges Unit 5-Quantity & magnitude Unit 6-Base tens; form of a number	**Number & Operations in Base Ten**	* Work with numbers 11-19 to gain foundations for place value
Unit 2-Counting principles Unit 5-Numeration; quantity & magnitude	**Measurement & Data**	* Describe and compare measurable attributes * Classify objects and count the number of objects in categories
Unit 2-Geometry Unit 7-Measuring circles (representing Earth); geometric thinking	**Geometry**	* Identify and describe shapes * Analyze, compare, create and compose shapes

Math Foundations Training		Common Core Math Standards
Unit Alignment		**Grade One**
Unit 3-Problem #1; equal exchanges; composing/decomposing Unit 5-The Number Line, different forms of a number; number line; quantity and magnitude; structures of addition/subtraction Unit 6-Base tens; form of a number	**Operations & Algebraic Thinking**	∗ Represent and solve problems involving addition and subtraction ∗ Understand and apply properties of operations and the relationship between addition and subtraction ∗ Add and subtract within 20 ∗ Work with addition and subtraction equations
Unit 3-Equal exchanges; composing/decomposing Unit 5-Different forms of a number line; quantity & magnitude; structures of addition/subtraction; numeration Unit 6-Base ten; equality and form of a number	**Number & Operations in Base Ten**	∗ Extend the counting sequence ∗ Understand place value ∗ Use place value understanding and properties of operations to add and subtract
Unit 2-Measurement	**Measurement & Data**	∗ Measure lengths indirectly and by iterating length units ∗ Tell and write time ∗ Represent and interpret data
	Geometry	∗ Reason with shapes and their attributes

Math Foundations Training		Common Core Math Standards
Unit Alignment		**Grade Two**
Unit 3-Equal exchanges; composing/decomposing Unit 5-Different forms of a number line; quantity & magnitude; numeration; structures of addition/ subtraction Unit 6-Base tens; form of a number and equality	**Operations & Algebraic Thinking**	* Represent and solve problems involving addition and subtraction * Add and subtract within 20 * Work with equal groups of objects to gain foundations for multiplication
Unit 3-Composing/decomposing; structures of addition/subtraction Unit 6-Base tens; form of a number and equality	**Number & Operations in Base Ten**	* Understand place value * Use place value understanding and properties of operations to add and subtract
Unit 3-Problem #4; area/perimeter Unit 5 Structures of Addition and Subtraction Unit 7-Measuring circles (representing Earth) using meter sticks	**Measurement & Data**	* Measure and estimate lengths in standard units * Relate addition and subtraction to length * Work with time and money * Represent and interpret data
Unit 3-Area/perimeter; problem #4 Unit 7-Geometric thinking	**Geometry**	* Reason with shapes and their attributes

Math Foundations Training		Common Core Math Standards
Unit Alignment		**Grade Three**
Unit 3-Structures; problem #2; concrete multiplication mats; use of arrays as related to multiplication Unit 5-Structures of addition/ subtraction/ multiplication/ division Unit 6-Base tens; form of a number and equality	**Operations & Algebraic Thinking**	∗ Represent and solve problems involving multiplication and division ∗ Understand properties of multiplication and the relationship between multiplication and division ∗ Multiply and divide within 100 ∗ Solve problems involving the four operations, and identify and explain patterns in arithmetic
Unit 3-Structures; base ten; composing/ decomposing Unit 5-Numeration; quantity & magnitude Unit 6-Form of a number and equality; Woodward strategies	**Number & Operations in Base Ten**	∗ Use place value understanding and properties of operations to perform multi-digit arithmetic
Unit 3-Bean party; rethinking fractions Unit 4-Trashketball; Marilyn Burns fraction kit Unit 5-Numeration; essence of percentages; Slices of Pizza--where do fractions live on the Number Line?	**Number & Operations in Fractions**	∗ Develop understanding of fractions as numbers
Unit 2-Measurement Unit 3-Problem #4; area/perimeter Unit 7-Geometric Thinking; Max; Challenges; Simpler problem	**Measurement & Data**	∗ Solve problems involving measurement and estimation of intervals of time, liquid volumes and masses of objects ∗ Represent and interpret data ∗ Geometric measurement: understand concepts of area and relate area to multiplication and to addition ∗ Geometric measurement: recognize perimeter as an attribute of plane figures and distinguish between linear and area measures
Unit 3-Problem #4; area/perimeter; Problem 2 as it relates area and arrays Unit 7-Measuring circles (representing Earth); Geometric Thinking; Max; Challenges; Simpler Problem; Foot Problem	**Geometry**	∗ Reason with shapes and their attributes

Math Foundations Training		Common Core Math Standards
Unit Alignment		**Grade Four**
Unit 3-Structures of addition/ subtraction/ multiplication/ division Partial Products/ Partial Quotients/ Arrays Unit 5-Numeration; structures Unit 7 Proportion Reasoning-Caterpillar Problem Geometric Thinking; Max, Challenges; Simpler Problem; Foot Problem	**Operations & Algebraic Thinking**	* Use the four operations with whole numbers solve problems * Gain familiarity with factors and multiples * Generate and analyze patterns
Unit 3-Base tens; structures; Problem 1; Subtraction Problem; Problem 2, Multiplication Problem Unit 5-Quantity & magnitude; structures of addition/ subtraction/ multiplication/ division Unit 6-Base tens; form of a number and equality	**Number & Operations in Base Ten**	* Generalize place value understanding and for multi-digit whole numbers * Use place value understanding and properties of operations to perform multi-digit arithmetic
Unit 3-Bean party; problem #3 ; Fraction Kit Unit 5-Numeration; essence of percentages; beyond slices of pizza	**Number & Operations in Fractions**	* Extend understanding of fraction equivalence and ordering * Build fractions from unit fractions by applying and extending previous understandings of operations on whole * Understand decimal notation for fractions and compare decimal fractions
Unit 3-Problem #4 area/perimeter	**Measurement & Data**	* Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit * Represent and interpret data * Geometric measurement: understand concepts of angle and measure angles
Unit 2-Geometry Unit 7-Geometric thinking	**Geometry**	* Draw and identify lines and angles and classify shapes by properties of their lines and angles

Math Foundations Training		Common Core Math Standards
Unit Alignment		**Grade Five**
Unit 2-Concrete reality Unit 5-Assignment vs. relational sentences; Mayer's model for problem solving Unit 7-Porportional reasoning; scalar & functional method; Caterpillar Problem; Max's Fence Problem	**Operations & Algebraic Thinking**	* Write and interpret numerical expressions * Analyze patterns and relationships
Unit 3-Base tens ; partial products Unit 5-Numeration; structures; quantity & magnitude; essence of percentages Unit 6-Base tens; form of a number and equality; Error Analysis	**Number & Operations in Base Ten**	* Understand the place value system * Perform operations with multi-digit whole numbers and with decimals to hundredths
Unit 3-Problem #3; division of fractions; Marilyn Burns fraction kits Unit 4-Trashketball, rethinking fractions Unit 5-Beyond slices of pizza	**Number & Operations in Fractions**	* Use equivalent fractions as a strategy to add and subtract fractions * Apply and extend previous understandings of multiplication and division and to multiply and divide fractions
Unit 3-Area/perimeter; problem #4 Unit 7-Measuring with meter stick around "Earth"; Geometric Thinking; Max, Challenges; Simpler Problem; Foot Problem	**Measurement & Data**	* Convert like measurement units within a given measurement system * Represent and interpret data * Geometric measurement: understand concepts of volume and relate volume to multiplication and to addition
Unit 2-Geometry Unit 7-Survey Questions; Measuring "Earth"; dollar deals; geometric thinking	**Geometry**	* Graph points on a coordinate plane to solve real-world and mathematical problems * Classify two-dimensional figures into categories based on their properties