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 High School-Number & Quantity
Unit 5-Hands on Equations; numeration	**The Real Number System**	*Extend the properties of exponents to rational exponents *Use properties of rational and irrational numbers
Unit 4-Trashketball; 2 stories Unit 5-Relational sentences; proportional relationship-raccoon to deer Unit 6-Form of a number	**Quantities**	*Reason quantitatively and use units to solve problems
Unit 5-Hands on Equations Unit 6-Base tens	**The Complex Number System**	*Perform arithmetic operations with complex numbers *Represent complex numbers and their operations on the complex plane *Use complex numbers in polynomial identities and equations
	Vector & Matrix Quantities	*Represent and model with vector quantities *Perform operations on vectors *Perform operations on matrices and use matrices in applications

Unit Alignment		High School-Algebra
Unit 5-Structures of addition/ subtraction/ multiplication/ division Unit 6-Form of a number	**Seeing Structure in Expressions**	*Interpret the structure of expressions *Write expressions in equivalent forms to solve problems
Unit 5-Hands on Equations	**Arithmetic with Polynomials & Rational Expressions**	*Perform arithmetic operations on polynomials *Understand the relationship between zeros and factors of polynomials *Use polynomials identities to solve problems *Rewrite rational expressions
Unit 5-Relational/assignment sentences Unit 7-Porportional reasoning; diagram literacy; Paper Clip Chains; String Around the Earth; Dollar Deals, etc.	**Creating Equations**	*Create equations that describe numbers or relationships
Unit 5-Hands on Equations; equality Unit 7- String Around the Earth; Dollar Deals, etc.	**Reasoning with Equations and Inequalities**	*Understand solving equations as a process of reasoning and explain the reasoning *Solve equations and inequalities in one variable *Solve systems of equations *Represent and solve equations and inequalities graphically

Unit Alignment		High School-Functions
Unit 7-Porportional reasoning; Paper Clip Chains; diagram literacy; String Around the Earth; Dollar Deals, etc.	**Interpreting Functions**	*Understand the concept of a function and use function notation *Interpret functions that arise in applications in terms of context *Analyze functions using different representations
Unit 2-Principals to students; diagram literacy; function table Unit 7-Scalar & functional method; Paper Clip Chains; String Around the Earth; Dollar Deals, etc.	**Building Functions**	*Build a function that models a relationship *Build new functions from existing functions
Unit 7-Porportional reasoning; scalar & functional method; diagram literacy; measuring around the "Earth"; plotting points for the circumference & diameter	**Linear, Quadratic & Exponential Models**	*Construct and compare linear, quadratic, and exponential models and solve problems *Interpret expressions for functions in terms of the situation they model
	Trigonometric Functions	*Extend the domain of trigonometric functions using the unit circle *Model periodic phenomena with trigonometric functions *Prove and apply trigonometric identities

Unit Alignment		High School-Geometry
	Congruence	*Experiment with transformations in the plane *Understand congruence in terms of rigid motions *Prove geometric theorems *Make geometric constructions
	Similarity, Right Triangles and Trigonometry	*Understand similarity in terms of similarity transformations *Prove theorems involving similarity *Define trigonometric rations and solve problems involving right triangles *Apply trigonometry to general triangles
Unit 7-Measuring around the "Earth"; testing pi theory	**Circles**	*Understand and apply theorems about circles *Find arc lengths and areas of sectors of circles
Unit 7-"Earth" example	**Expressing Geometric Properties with Equations**	* Translate between the geometric description and the equation for a conic section *Use coordinates to prove simple geometric theorems algebraically
Unit 3-Problem #4 area/perimeter Unit 7-Geometric thinking	**Geometric Measurement and Dimension**	*Explain volume formulas and use them to solve problems *Visualize relationships between two-dimensional and three-dimensional objects
Unit 3-Problem #4 area/perimeter Unit 7-"Earth" example	**Modeling with Geometry**	*Apply geometric concepts in modeling situations

Unit Alignment		High School Statistics & Probability
Unit 7-Dollar deals; Puggly Wuggly vs. Fancy Foods	**Interpreting Categorical & Quantitative Data**	*Summarize, represent and interpret data on a single count or measurement variable *Summarize, represent and interpret data on two categorical and quantitative variables *Interpret linear models
	Making Inferences & Justifying Conclusions	*Understand and evaluate random processes underlying statistical experiments *Make inferences and justify conclusions from sample surveys, experiments and observational studies
	Conditionally Probability and the Rules of Probability	*Understand independence and conditional probability and use them to interpret data *Use the rules of probability to compute probabilities of compound events in an uniform probability model
Unit 7-Porportional reasoning	**Using Probability to Make Decisions**	* Calculate expected values and use them to solve problems *Use probability to evaluate outcomes of decisions