FIRST NINE WEEKS	OVERVIEW
	The primary focus of this course is on functions and statistical thinking, continuing the study of algebra, functions, trigonometry and statistical concepts previously experienced in NC Math 1-3. The course is designed to be a capstone to introductory statistical concepts. Additionally, the course intentionally integrates concepts from algebra and functions to demonstrate the close relationship between algebraic reasoning as applied to the characteristics and behaviors of more complex functions.

See the bottom of this document for a detailed description of the assessments as well as the parent/family resources.

UNIT	UNIT DURATION	PARENT/FAMILY RESOURCES	NORTH CAROLINA STANDARDS
Unit 1: Parent Functions and Key Features	Approximately 5 Days		Review of NC Math 3 Functions domain
Unit 2: Functions	Approximately 15 Days	Piecewise Functions	AF.4: Understand the properties and key features of piecewise functions. AF.4.1: Translate between algebraic and graphical representations of piecewise functions (linear, exponential, quadratic, polynomial, square root, rational, radical, logarithmic). AF.4.2: Construct a piecewise function to model a contextual situation. AF.1: Apply properties of function composition to build new functions from existing functions. AF.1.1: Execute algebraic procedures to compose two functions. AF.1.2: Execute a procedure to determine the value of a composite function at a given value when the functions are in algebraic, graphical, or tabular representations. AF.5: Understand how to model functions with regression. AF.5.1: Construct regression models of linear, quadratic, exponential, logarithmic, & sinusoidal functions of bivariate data using technology to model data and solve problems. AF.5.2: Compare residuals and residual plots of non-linear models to assess the goodness-of fit of the model.
Unit 3: Logarithmic Functions	Approximately 10 Days	Logs Log Functions	AF.3: Apply the properties and key features of logarithmic functions. AF.3.1: Execute properties of logarithms to simplify and solve equations algebraically. AF.3.2: Implement properties of logarithms to solve equations in contextual situations. AF.3.3: Interpret key features of a logarithmic function using multiple representations. AF.5: Understand how to model functions with regression.

			AF.5.1: Construct regression models of linear, quadratic, exponential, logarithmic, & sinusoidal functions of bivariate data using technology to model data and solve problems.
Unit 4: Trigonometry	Approximately 15 Days	Trigonometry	AF.2: Apply properties of trigonometry to solve problems involving all types of triangles. AF.2.1: Translate trigonometric expressions using the reciprocal and Pythagorean identities. AF.2.2: Implement Law of Sines and Law of Cosines to solve problems. AF.2.3: Interpret key features (amplitude, period, phase shift, vertical shifts, midline, domain, range) of models using sine and cosine functions in terms of a context. AF.5: Understand how to model functions with regression. AF.5.1: Construct regression models of linear, quadratic, exponential, logarithmic, & sinusoidal functions of bivariate data using technology to model data and solve problems.

	OVERVIEW
SECOND NINE WEEKS	The primary focus of this course is on functions and statistical thinking, continuing the study of algebra, functions, trigonometry and statistical concepts previously experienced in NC Math 1-3. The course is designed to be a capstone to introductory statistical concepts. Additionally, the course intentionally integrates concepts from algebra and functions to demonstrate the close relationship between algebraic reasoning as applied to the characteristics and behaviors of more complex functions.

UNIT	UNIT DURATION	PARENT/FAMILY RESOURCES	NORTH CAROLINA STANDARDS
Unit 5: Exploratory Data Analysis	Approximately 15 Days	Statistics	SP.1: Create statistical investigations to make sense of real-world phenomenon. SP.1.1: Construct statistical questions to guide explorations of data in context. [For example, a question that: anticipates variability, is answerable with data, states the population under consideration, states the attribute under investigation, and is clear enough to guide the analysis of the data] SP.1.2: Design sample surveys and comparative experiments using sampling methods and to collect and analyze data to answer a statistical question. SP.1.3: Organize large datasets of real world contexts (i.e. datasets that include 3 or more measures and have sample sizes >200) using technology (i.e. spreadsheets, dynamic data analysis tools) to determine: types of variables that are in the data set, possible outcomes for each variable, statistical questions that could be asked of the data, and types of numerical and graphical summaries could be used to make sense of the data. SP.1.4: Interpret non-standard data visualizations from the media or scientific papers to make sense of real-world phenomenon.
Unit 6: Probability Distributions	Approximately 15 days	Probability	SP.3: Apply probability distributions in making decisions in uncertainty. SP.3.1: Implement discrete probability distributions to model a random phenomenon and make decisions (for example, expected value of playing a game, etc). SP.3.2: Implement the binomial distribution to model situations and make decisions. SP.3.4: Implement the normal distribution as a probability distribution to determine the likelihood of events occurring.

Unit 7: Statistical Inference	Approximately 15 Days	Categorical Data	SP.2: Apply informal and formal statistical inference to make sense of, and make decisions in, meaningful real-world contexts. SP.2.1: Design a simulation to create a sampling distribution that can be used in making informal statistical inferences. SP.2.2: Construct confidence intervals of population proportions in the context of the data. SP.2.3: Implement a one-proportion z-test to determine if an observed proportion is significantly different from a hypothesized proportion. SP.3: Apply probability distributions in making decisions in uncertainty. SP.3.3: Recognize from simulations of sampling distributions of sample proportions that a normal distribution can be used as an approximate model in certain situations.
Unit 8: ACT Prep	Approximately 3 Days		N.1: Apply properties and operations with complex numbers. N.1.1: Execute procedures to add and subtract complex numbers. N.1.2: Execute procedures to multiply complex numbers. N.2: Apply properties and operations with matrices and vectors. N.2.1: Execute procedures of addition, subtraction, multiplication, and scalar multiplication on matrices. N.2.2: Execute procedures of addition, subtraction, and scalar multiplication on vectors.

Parent/Family Materials-Selected Khan Academy resources to correspond with the NC Math 4 units.