North Carolina Essential Standards
Discrete Mathematics

Note on Numbering: **N**–Number and Operations, **A**–Algebra, **G**–Geometry, **M**–Measurement, **S**–Statistics and Probability and **D**–Discrete Mathematics

Algebra

	Essential Standard	Clarifying Objectives	
MD.A.1	**Use recursion to model and solve problems.**	MD.A.1.1	Calculate the sum of a finite sequence.
		MD.A.1.2	Calculate the sum of an infinite sequence.
		MD.A.1.3	Differentiate between the convergence or divergence of a given series.
		MD.A.1.4	Use iterative processes to write explicit definitions and formulas for arithmetic and geometric sequences.
		MD.A.1.5	Evaluate explicit definitions using inductive proofs.
MD.A.2	**Use matrices to model and solve problems.**	MD.A.2.1	Analyze data.
		MD.A.2.2	Use matrix expressions to solve problems.
MD.A.3	**Use graph theory to model relationships and solve problems.**	MD.A.3.1	Represent graphs using diagrams and matrices.
		MD.A.3.2	Translate between diagram and matrix representations of graphs.
		MD.A.3.3	Understand coloring of a graph, chromatic number of a graph and the Four Color Theorem.
		MD.A.3.4	Apply coloring algorithms in problems such as mapping and scheduling.
		MD.A.3.5	Use trees to represent problems involving decision making.

Statistics and Probability

	Essential Standard	Clarifying Objectives	
MD.S.1	**Analyze data to solve problems.**	MD.S.1.1	Apply methods of data collection.
		MD.S.1.2	Apply statistical principles and methods in sample surveys.
		MD.S.1.3	Calculate measures of central tendency and spread.
		MD.S.1.4	Use the normal distribution curve.
		MD.S.1.5	Interpret graphical displays of data.

	Essential Standard	Clarifying Objectives	
		MD.S.1.6	Compare distributions of data.
MD.S.2	**Use theoretical and experimental probability to model and solve problems.**	MD.S.2.1	Use addition and multiplication principles.
		MD.S.2.2	Calculate permutations and combinations.
		MD.S.2.3	Generate simulations for probability models.
		MD.S.2.4	Calculate expected values and determine fairness.
		MD.S.2.5	Use discrete random variables to solve problems.
		MD.S.2.6	Apply the Binomial Theorem.

Discrete

	Essential Standard	Clarifying Objectives	
MD.D.1	**Evaluate decision making methods and strategies.**	MD.D.1.1	Apply properties of fair division.
		MD.D.1.2	Use majority, plurality, points-for-preference, runoff, pair-wise comparison, approval and apportionment to make fair decisions.
		MD.D.1.3	Analyze fair decision strategies in terms of fairness and Arrow's Theorem.
		MA.D.1.4	Apply mathematical concepts and strategies related to information processing, particularly on the internet with a focus on access, security, accuracy and efficiency.