North Carolina Essential Standards
Mathematics Grade 7

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

Number and Operations

	Essential Standard	Clarifying Objectives	
7.N.1	**Use proportional reasoning to find missing values in problems.**	7.N.1.1	Use proportional reasoning to find missing values for part-to-part ratio and part-to-whole ratio problems.
		7.N.1.2	Use given conversion factors to convert measures given in either customary or metric units to the other system.
		7.N.1.3	Use sampling strategies to collect data about unknown populations.
7.N.2	**Apply an understanding of percent and percent change to estimate and solve problems, including percents greater than 100.**	7.N.2.1	Use concepts of percent to solve problems.
		7.N.2.2	Use concepts of percent of change to solve problems.
7.N.3	**Use all four arithmetic operations to solve problems involving integers.**	7.N.3.1	Use addition and subtraction of integers to solve problems.
		7.N.3.2	Use multiplication and division of integers to solve problems.

Algebra

	Essential Standard	Clarifying Objectives	
7.A.1	**Apply mathematical operations and properties for integers and non-negative fractions and decimals to solve two-step equations and inequalities with integer or non-negative fraction and decimal solutions.**	7.A.1.1	Use mathematical operations and properties to solve equations.
		7.A.1.2	Use mathematical operations and properties to solve inequalities.

	Essential Standard	Clarifying Objectives	
7.A.2	**Represent change in the relationship between two variables in arithmetic sequences.**	7.A.2.1	Represent relationships between two variables in an arithmetic sequence using tables, graphs and algebraic equations.
		7.A.2.2	Explain how a change in the relationship between two variables affects the table, graph and equation.
7.A.3	**Understand the rate of change to solve problems.**	7.A.3.1	Represent the rate of change in a set of data from an arithmetic sequence using tables, graphs and algebraic equations.
		7.A.3.2	Interpret the meaning of the rate of change.

Geometry

	Essential Standard	Clarifying Objectives	
7.G.1	**Understand similar and congruent figures.**	7.G.1.1	Understand the role of proportionality and corresponding angles in similar figures.
		7.G.1.2	Summarize the properties of congruent and similar figures.
7.G.2	**Represent three-dimensional shapes using multiple perspectives.**	7.G.2.1	Analyze three-dimensional shapes from a variety of two-dimensional perspectives.

Measurement

	Essential Standard	Clarifying Objectives	
7.M.1	**Use appropriate formulas and strategies to calculate the volume and surface area of cylinders and prisms.**	7.M.1.1	Use strategies to calculate the volume of prisms and cylinders.
		7.M.1.2	Use strategies to calculate the surface area of prisms and cylinders.
7.M.2	**Apply scale factors to solve problems.**	7.M.2.1	Use scale factors and proportional reasoning to solve problems involving indirect measurement and similar figures.
		7.M.2.2	Use scale factors to solve problems with dilations of two-dimensional shapes from the origin.

Statistics and Probability

	Essential Standard	Clarifying Objectives	
7.S.1	**Understand the relationships between experimental and the theoretical probabilities of compound, independent events for varying sample sizes.**	7.S.1.1	Use the outcomes from random experiments to estimate a probability for compound, independent events.
		7.S.1.2	Predict the outcomes of probability experiments for compound, independent events based on the theoretical probability.
		7.S.1.3	Interpret the actual outcomes from probability experiments for compound, independent situations.
		7.S.1.4	Compare the relationship between the experimental and theoretical probabilities of compound, independent events for varying sample sizes.
7.S.2	**Interpret data using box plots.**	7.S.2.1	Construct models of data using box plots.
		7.S.2.2	Interpret distributions of data using quartiles, median, shape and interquartile range.
		7.S.2.3	Infer conclusions that are consistent with available data.
7.S.3	**Analyze graphical displays of two distributions of data in terms of their shape, measures of center and variability.**	7.S.3.1	Summarize two sets of data using histograms, box plots, dot plots and back-to-back stem-and-leaf plots.
		7.S.3.2	Interpret distributions of two sets of data using measures of center, measures of variability (interquartile range and range) and shape (clusters, peaks, gaps and symmetry).
		7.S.3.3	Analyze two distributions of data to infer conclusions that are consistent with available data.