NSCAS Alternate Math Table of Specifications - Grade 8

MA 8.1	**NUMBER: Students will communicate number sense concepts using multiple representations to reason, solve problems, and make connections within mathematics and across disciplines.**					
MA 8.1.1	**Numeric Relationships: Students will demonstrate, represent, and show relationships among real numbers within the base-ten number system.**	**Max DOK Level**	**DOK 1 Stage 1 Stage 2**	**DOK 1 Stage 3**	**DOK 2 Stage 4**	**Item Total**
MA 8.1.1.a	Determine subsets of numbers as natural, whole, integer, rational, irrational, or real, based on the definitions of these sets of numbers. *Extended: Distinguish among whole numbers, fractions, and decimals.*		0 — 2	0 — 1	0 — 1	0 — 4
MA 8.1.1.b	Represent numbers with positive and negative exponents and in scientific notation. *Extended: Represent numbers with the base of 2, 3, 4, or 5 and positive exponents of 2 and 3 in expanded form (e.g., 4^3 = 4 x 4 x 4).*		0 — 2	0 — 1	0 — 1	0 — 4
MA 8.1.1.d	Approximate, compare, and order real numbers (both rational and irrational) and order real numbers both off and on the number line. *Extended: Compare and order tenths, fourths, thirds, halves, and whole numbers 1–100 with a number line.*		0 — 2	0 — 1	0 — 1	0 — 4
MA 8.1.2	**Operations: Students will compute with exponents and roots.**	**Max DOK Level**	**DOK 1 Stage 1 Stage 2**	**DOK 1 Stage 3**	**DOK 2 Stage 4**	**Item Total**
MA 8.1.2.a	Evaluate the square roots of perfect squares less than or equal to 400 and cube roots of perfect cubes less than or equal to 125. *Extended: Identify the squares of whole numbers up to 5.*		0 — 2	0 — 1	0 — 1	0 — 4
MA 8.1.2.c	Simplify numerical expressions involving absolute value. *Extended: Determine absolute value using a model (e.g., temperature below zero).*		0 — 2	0 — 1	0 — 1	0 — 4
MA 8.1.2.e	Estimate and check reasonableness of answers using appropriate strategies and tools. *Extended: Estimate multiplication results to the nearest 10 up to 100.*		0 — 2	0 — 1	0 — 1	0 — 4

MA 8.2	**ALGEBRA: Students will communicate algebraic concepts using multiple representations to reason, solve problems, and make connections within mathematics and across disciplines.**					
MA 8.2.1	**Algebraic Relationships: Students will demonstrate, represent, and show relationships with expressions, equations, and inequalities.**	**Max DOK Level**	**DOK 1 Stage 1 Stage 2**	**DOK 1 Stage 3**	**DOK 2 Stage 4**	**Item Total**
MA 8.2.1.a	Create algebraic expressions, equations, and inequalities (e.g., two-step, one variable) from word phrases, tables, and pictures. *Extended: Identify an expression with two different operations that matches the description.*		0 — 2	0 — 1	0 — 1	0 — 4
MA 8.2.1.b	Determine and describe the rate of change for given situations through the use of tables and graphs. *Extended: Describe the rate of change of a proportional relationship given a table.*		0 — 2	0 — 1	0 — 1	0 — 4
MA 8.2.1.c	Describe equations and linear graphs as having one solution, no solution, or infinitely many solutions. *Extended: Identify the point of intersection (solution) for intersecting lines on a coordinate plane.*		0 — 2	0 — 1	0 — 1	0 — 4
MA 8.2.1.d	Graph proportional relationships and interpret the slope. *Extended: Given a graph of a line through the origin and a point on the line, determine another point on the line.*		0 — 2	0 — 1	0 — 1	0 — 4

MA 8.2.2	**Algebraic Processes: Students will apply the operational properties when evaluating expressions and solving expressions, equations, and inequalities.**	**Max DOK Level**	**DOK 1 Stage 1 Stage 2**	**DOK 1 Stage 3**	**DOK 2 Stage 4**	**Item Total**
MA 8.2.2.a	Solve multi-step equations involving rational numbers with the same variable appearing on both sides of the equal sign. *Extended: Solve a two-step equation using whole numbers (e.g., 2n – 8 = 0; n = 4).*		0 — 2	0 — 1	0 — 1	0 — 4
MA 8.2.2.b	Solve two-step inequalities involving rational numbers and represent solutions on a number line. *Extended: Solve a two-step inequality using whole numbers (e.g., 2n – 8 > 0; n > 4).*		0 — 2	0 — 1	0 — 1	0 — 4
MA 8.2.3	**Applications: Students will solve real-world problems involving multi-step equations and multi-step inequalities.**	**Max DOK Level**	**DOK 1 Stage 1 Stage 2**	**DOK 1 Stage 3**	**DOK 2 Stage 4**	**Item Total**
MA 8.2.3.a	Describe and write equations from words, patterns, and tables. *Extended: Identify an equation that represents a number pattern.*		0 — 2	0 — 1	0 — 1	0 — 4
MA 8.2.3.b	Write a multi-step equation to represent real-world problems using rational numbers in any form. *Extended: Identify an equation that represents a real-world problem with fractions.*		0 — 2	0 — 1	0 — 1	0 — 4
MA 8.2.3.c	Solve real-world multi-step problems involving rational numbers in any form. *Extended: Solve a real-world problem with fractions.*		0 — 2	0 — 1	0 — 1	0 — 4

MA 8.3	**GEOMETRY: Students will communicate geometric concepts and measurement concepts using multiple representations to reason, solve problems, and make connections within mathematics and across disciplines.**					
MA 8.3.1	**Characteristics: Students will identify and describe geometric characteristics of two-dimensional shapes.**	**Max DOK Level**	**DOK 1 Stage 1 Stage 2**	**DOK 1 Stage 3**	**DOK 2 Stage 4**	**Item Total**
MA 8.3.1.a	Determine and use the relationships of the interior angles of a triangle to solve for missing measures. *Extended: Identify the missing angle measure in 45-45-90 triangles and 30-60-90 triangles given two of the angles and a drawing of the triangle.*		0 — 2	0 — 1	0 — 1	0 — 4
MA 8.3.2	**Coordinate Geometry: Students will determine location, orientation, and relationships on the coordinate plane.**	**Max DOK Level**	**DOK 1 Stage 1 Stage 2**	**DOK 1 Stage 3**	**DOK 2 Stage 4**	**Item Total**
MA 8.3.2.a	Perform and describe positions and orientation of shapes under single transformations including rotations (in multiples of 90 degrees about the origin), translations, reflections, and dilations on and off the coordinate plane. *Extended: Identify the orientation of a shape or letter following a reflection.*		0 — 2	0 — 1	0 — 1	0 — 4
MA 8.3.2.b	Find congruent two-dimensional figures and define congruence in terms of a series of transformations. *Extended: Distinguish between pairs of congruent and non-congruent two-dimensional shapes.*		0 — 2	0 — 1	0 — 1	0 — 4
MA 8.3.2.c	Find similar two-dimensional figures and define similarity in terms of a series of transformations. *Extended: Distinguish between pairs of similar and non-similar two-dimensional shapes.*		0 — 2	0 — 1	0 — 1	0 — 4

MA 8.3.3	**Measurement: Students will perform and compare measurements and apply formulas.**	**Max DOK Level**	**DOK 1 Stage 1 Stage 2**	**DOK 1 Stage 3**	**DOK 2 Stage 4**	**Item Total**
MA 8.3.3.c	Find the distance between any two points on the coordinate plane using the Pythagorean Theorem. *Extended: Find the distance between two points on the x- or y-axis in quadrant I.*		0 — 2	0 — 1	0 — 1	0 — 4
MA 8.3.3.d	Determine the volume of cones, cylinders, and spheres, and solve real-world problems using volumes. Extended: Identify the cone, cylinder, or sphere with the greatest volume when given three cones with either the same base or the same height, three *cylinders with either the same base or the same height, or three spheres.*		0 — 2	0 — 1	0 — 1	0 — 4

MA 8.4	**DATA: Students will communicate data analysis/probability concepts using multiple representations to reason, solve problems, and make connections within mathematics and across disciplines.**					
MA 8.4.1	**Representations: Students will create displays that represent data.**	**Max DOK Level**	**DOK 1 Stage 1 Stage 2**	**DOK 1 Stage 3**	**DOK 2 Stage 4**	**Item Total**
MA 8.4.1.a	Represent bivariate data (i.e. ordered pairs) using scatter plots. *Extended: Identify a scatter plot from graphical representations.*		0 — 2	0 — 1	0 — 1	0 — 4
MA 8.4.2	**Analysis & Applications: Students will analyze data to address the situation.**	**Max DOK Level**	**DOK 1 Stage 1 Stage 2**	**DOK 1 Stage 3**	**DOK 2 Stage 4**	**Item Total**
MA 8.4.2.a	Solve problems and make predictions using an approximate line of best fit. *Extended: Identify the line of best fit for a scatter plot.*		0 — 2	0 — 1	0 — 1	0 — 4
MA 8.4.3	**Probability: Students will interpret and apply concepts of probability.**	**Max DOK Level**	**DOK 1 Stage 1 Stage 2**	**DOK 1 Stage 3**	**DOK 2 Stage 4**	**Item Total**