K-2 Mathematics at a Glance

	Kindergarten	First Grade	Second Grade
Numbers and Operations	• Count to 30 • Number words to ten • Write numerals to 20 • Compare sets up to 10 • Estimate to 5 or 10 • Identify coins (penny nickel, dime, quarter) • Count money to 30 cents • Ordinal numbers 1^{st} – 10^{th} • Share equally (2 or 3 sets) • Model Addition and Subtraction • Use pictures, numbers, or words to solve problems	• Count , represent, and order numbers to 100 • Compare using >,<,= • Identify bills • Count money to $20 • Make fair trades to less than $20 • Place value to 100 • Round to the nearest 10 • Addition and Subtraction to 100, understand Inverse Relationships • Skip count by 2's, 5's, and 10's forward and backward • Addition and subtraction facts to 18 • Share equally (2-5 sets) • Patterns (even and odd) • Fractions (halves, fourths) • Use pictures, numbers, or words to solve problems	• Place value to 4 digits • Multiple representations of numbers • Count back change, use dollar and cent symbols • Basic properties of addition • 3-digit addition and subtraction with and without regrouping • Estimation • Concepts of Multiplication • Comparing Fractions (thirds, sixths, eighth, tenths) • Understand how many pieces make a whole • Use boxes to represent missing values • Equality and Inequality • Use pictures, numbers, or words to solve problems
Measurement	• Compare/order length, capacity, height, weight • Calendar : days of the week, months of the year, four seasons • Order events • Time: morning, afternoon, and night	• Directly compare/order length, weight, capacity by estimation and use of tools • Nonstandard units of measure • Relationship of minute hand and hour hand • Time to the nearest hour and half hour • Using a calendar • Sequence events	• Measure (inch, foot, yard, centimeter, meter) • Estimate length • Determine appropriate measurement tool • Tell time to nearest 5 minutes • Number of minutes in an hour and hours in a day • Measure and Estimate temperature (Fahrenheit)
Geometry	• Identify, Combine and compare 2-D and 3-D Shapes • Spatial / Positional Relationships • Identify, compare, and extend patterns	• Create 2-D and 3-D figures • Classify and compare shapes • Spatial / Positional reasoning	• Describe and Classify 2-D and 3-D Shapes according to attributes • Decomposing 2-D / 3-D composite figures and describe changes
Data Analysis and Probability	• Question • Collect data • Pictographs	• Create and interpret tables and graphs (include bar graphs) • Tally marks	• Create and interpret tables and graphs (include Venn Diagrams and charts/tables)
Process Skills	Problem Solve, Arguments, Math Vocabulary, Interconnectivity, Communication	Problem Solve, Arguments, Math Vocabulary, Interconnectivity, Communication	Problem Solve, Arguments, Math Vocabulary, Interconnectivity, Communication

Georgia Department of Education
Kathy Cox, State Superintendent of Schools
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Middle School Mathematics at a Glance

	6th Grade	7th Grade	8th Grade
Numbers and Operations	• Factors and multiples • Fundamental Theorem of Arithmetic • GCF and LCM • Compute with fractions and mixed numbers (unlike denominators) • Equivalent fractions, decimals, and percents	• Absolute value • Compare & order rational numbers • Compute & solve problems with positive and negative rational numbers	• Square roots of perfect squares • Rational vs Irrational numbers • Simplify expressions with integer exponents • Scientific Notation
Measurement	• Convert units using proportions • Volume of right rectangular prisms, right circular cylinders, pyramids and cones • Surface area of right rectangular prisms, right circular cylinders		
Geometry	• Line & rotational symmetry • Ratio, proportion and scale factor with similar plane figures • Scale drawings • Compare/contrast right prisms/pyramids and cylinders/cones • Views of solid figures • Nets (prisms, cylinders, pyramids, and cones)	• Basic constructions • Transformations • Properties of similarity • 3-D figures formed by translations & rotations in space • Cross sections of cones, cylinders, pyramids and prisms	• Properties of parallel and perpendicular lines • Meaning of congruence • Pythagorean Theorem
Algebra	• Ratio for quantitative relationship • Write & solve proportions • Write & solve simple one-step equations	• Algebraic expressions • Linear equations in one variable • Relationships between two variables	• Represent, analyze, and solve problems • Inequalities in one variable • Graphs of linear equations and inequalities • Systems of linear equations and inequalities
Data Analysis and Probability	• Question, Collect Data, Make Graphs • Experimental/ Theoretical Probability • Predictions from investigations	• Question, Collect Data, Make Graphs, Interpret results	• Set theory • Tree Diagrams/ Counting Principles • Basic laws of probability • Organize, interpret, make inferences form data
Process Skills	Problem Solving, Arguments, Communicate, Connections, Multiple Representations	Problem Solving, Arguments, Communicate, Connections, Multiple Representations	Problem Solving, Arguments, Communicate, Connections, Multiple Representations

Math 9-12 Alignment

	MATH 1	MATH 2	MATH 3	MATH 4
NUMBER & OPERATIONS		• Complex numbers		
GEOMETRY	• Distance between 2 points • Distance between a point and a line • Midpoint • Inductive, deductive reasoning • Converse, inverse, contrapositive • Sum of interior, exterior angles • Triangle inequalities • SSS, SAS, ASA, AAS, HL • Use and prove properties of special quadrilaterals • Incenter, orthocenter, circumcenter, centroid	• Special right triangles • Right triangle trigonometry • Circles and properties • Length of arc • Area of a sector • Surface area and volume of sphere • Relationships of similar solids	• Investigate relationships between lines and circles • Circle • Ellipse • Hyperbola • Parabola • Equations of Planes and spheres	

	MATH 1	MATH 2	MATH 3	MATH 4
ALGEBRA		• Step & piecewise functions • Characteristics of their graphs • Solve absolute value equations and inequalities • Exponential functions • Solve exponential equations and inequalities • Geometric sequences as exponential function • Quadratic function ($y = ax^2 + bx + c$) and its graph • Quadratic inequalities • Inverses	• Polynomials of degree > 2 • Classify polynomial functions as even, odd, or neither • Characteristics of poly. functions • Logarithmic functions • Solve exponential, logarithmic and polynomial equations and inequalities • Perform operations with, find inverses of, and examine properties of matrices • Use matrices of represent and solve problems • Linear programming • Vertex-edge graphs	• Rational functions • Solve rational equations and inequalities • Unit circle trigonometric functions • Graph of 6 trigonometric functions • Build functions using sum, difference, product, quotient, and composition of functions • Trigonometric identities • Solve trigonometric equations and inequalities by graphing and algebraic manipulation • Law of Sines • Law of Cosines • Area of triangle (trig) formula • Inverse trigonometric functions (sine, cosines, and tangent only) • Sequences and series • Summation notation • Understand and use vectors
DATA ANALYSIS AND PROBABILITY	• Principles of counting • Simple permutations & combinations • Mutually exclusive, dependent, and conditional events • Expected values • Compare summary	• Population means & deviations • Model data using linear and quadratic regressions	• Histograms of discrete random variables • Normal distribution • Experimental and observational studies	• Central limit theorem • Confidence interval • Margin of error

	statistics • Understand random sample • Mean absolute deviation			
PROCESS STANDARDS	Problem Solving, Arguments, Math Vocabulary, Interconnectivity, Communication	Problem Solving, Arguments, Math Vocabulary, Interconnectivity, Communication	Problem Solving, Arguments, Math Vocabulary, Interconnectivity, Communication	Problem Solving, Arguments, Math Vocabulary, Interconnectivity, Communication