K-8 Mathematics Vertical Alignment

	Kindergarten	First Grade	Second Grade	Third Grade	Fourth Grade	Fifth Grade	Sixth Grade	Seventh Grade	Eighth Grade
Numbers and Operations	• Counting, Comparing, Estimating, Money • Modeling Addition and Subtraction	• Counting, Comparing, Estimating, Money • Place Value • Addition and Subtraction, Inverse Relationships • Number Theory: Division, Patterns, Fractions	• Place Value to 4 digits, Money • Multi-digit Addition and Subtraction • Concepts of Multiplication • Comparing Fractions • Equality/Inequality	• Place Value tenths to ten-thousandths • Application of addition and subtraction • Multiplication concepts 2-3 digit by 1-digit • Concepts of Division 2-3 digit by 1-digit whole numbers • Basic concepts of decimal fractions and common fractions	• Place Value hundredths to one million • Rounding to nearest 10,000 or 1,000 • Multiplication concepts 2-3 digit by 1-2 digit • Compute with 2-digit decimal fractions • Add/Subtract common fractions with common denominators • Order of Operations • Properties	• Multiplies, Factors, Divisibility • Place Value • Compute with and apply decimal fractions less than one and greater than one • Compute and estimate fractions with unlike denominators • Meaning of Percentage	• Factors and multiples • Fundamental Theorem of Arithmetic • GCF & 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 numbers	• Square roots of perfect squares • Rational vs irrational numbers • Simplify expressions with integer exponents • Scientific Notation
Measurement	• Classification • Calendar Time, Ordering Events, Telling Time	• Comparing and Ordering Length, Weight, Capacity • Telling Time, Using a Calendar, Sequencing	• Measuring Estimating, Comparing Length • Telling Time • Measuring and Estimating Temperature	• Elapsed Time (full, half, quarter hour) • Length to nearest ¼, ½ inch and mm • Area and Perimeter of squares and rectangles	• Weight and Mass • Angle Concepts and Measurement	• Concepts/ Computation/ Estimation of Area • Capacity • Concepts & Measurement of Volume of Cube and rectangular Prism	• Convert units using proportions • Volume of rectangular prism, cylinders, pyramids and cones • Surface area of rectangular prism and cylinders		
Geometry	• Identifying, Combining, Comparing 2-D and 3-D Shapes • Positional Relationships • Patterns	• 2-D and 3-D Constructions • Spatial Reasoning • Classification of Shapes	• Classification of 2-D and 3-D Shapes • 2-D and 3-D Spatial Reasoning	• Application of Geometric Figures • Angle relationships • Concepts of Circles	• Classification of Geometric Figures • Model of 3-D Figures • Coordinate System	• Meaning of Congruence • Circumference	• Line & rotational symmetry • Ratio, proportion, and scale factor with similar plane figures • Scale drawings • Compare/contrast prisms/pyramids and cylinders/cones • Nets (prisms, cylinders, pyramids, & 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				• Using Mathematical Expressions to Represent Relationships	• Interpret Mathematical Relationships in Quantitative Expressions	• Algebraic Representation using variables	• 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 • Relations and linear functions
Data Analysis and Probability	• Questioning, Collecting Data, Making Graphs	• Creating Tables and Graphs	• Creating and Interpreting Tables and Graphs	• Creating and Interpreting Tables and Graphs	• Collecting, Organizing, and Displaying Data	• Organize, Display, and Analyze Data, Choose appropriate graphs	• 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 from data
Process Skills	Problem Solving Arguments, Language of Mathematics, Interconnectivity, Communication	Problem Solving Arguments, Language of Mathematics, Interconnectivity, Communication	Problem Solving Arguments, Language of Mathematics, Interconnectivity, Communication	Problem Solving Arguments, Language of Mathematics, Interconnectivity, Communication	Problem Solving Arguments, Language of Mathematics, Interconnectivity, Communication	Problem Solving Arguments, Language of Mathematics, Interconnectivity, Communication	Problem Solving Arguments, Communicate, Connections, Multiple Representations	Problem Solving Arguments, Communicate, Connections, Multiple Representations	Problem Solving Arguments, Communicate, Connections, Multiple Representations