KEY LEARNINGS: MATHEMATICS CHART

2009-2011

Standards of problem solving, reasoning, communications and representation are embedded in the teaching of the standards listed below.

	Number and Operations	Algebra	Geometry	Measurement	Data Analysis and Probability
K	• Count to 20 • Write 0 to 10 • 1-1 correspondence • Add to 10 • Subtract to 10	• Classification of objects • Sort by time, size, numbers, etc. • Compare and contrast objects • Manipulatives to model problem	• Compare by size, color, shape • Identify triangles, squares, circles • Describe position in space • Fit puzzle pieces • 3-dimensional objects	• Weight and capacity • Length, size, distance, temperature • Use of thermometer • Order events by time • Clocks, watches, calendars • Time to hour • Days of week	• Events as likely/unlikely
1	• Count, write 0 to 100 • Count by 2's, 5's, 10's, 25's to 100 • Skip count by 10's, e.g. 17, 27… • Place value of tens and ones • Fractions: ½, ⅓, ¼	• Patterns • Relationships • Regularities • Number lines and number sentences	• Geometric terms and shapes • Symmetry	• Time to hour and half-hour • Estimation and measures • Standard and metric • Coins to $1.00	• Analysis of data • Predicted and actual outcomes • Probability
2	• 3-digit numbers • Skip count by 2's, e.g. 23, 25, 27… • Ordinals 1-20 • Even and odd numbers • Place value: hundreds, tens, ones • Fact families • + and - facts to 20 by recall • + and - 2-digit, and 3-digit • + 3 numbers • Round to nearest 10 • Write, + and - money	• Patterns to make generalizations, predictions • Patterns in tables and graphs • Equivalence concepts using symbols	• 2- and 3- dimensional shapes • Simple coordinates • Prisms, pyramids, cylinders and cones • Relate geometry to number and measurement	• Measuring tools • Units of measure • Weight and capacity • Tell time; A.M. and P.M. • Coins and dollars to $5.00 • Change to $1.00 • Days, dates on calendar • Week before, after on calendar	• Simple bar graph • Simple table and chart • Predictions and validity • Probability study with 50/50 chance
3	• Place value to 10,000 • Number lines • Skip count by 3's, e.g. 15, 18, 21… • Commutative property of + and x • Zero property of x • Decimal point • Tenths written as a decimal • x and ÷ fact families • + and - 4-digit • x mentally by 10 and 100 • x and ÷ 2-digit by 1-digit • Fractions • Simple mixed numbers • + and - fractions with like denominators • + and - money • Estimate number computations	• Patterns • Equations and inequalities • Solve equations and inequalities • Commutative and associative properties • Grouping symbols	• Congruence and similarity • Perimeter • Count to find area and volume • 2-dimensional objects • 2- and 3- dimensional terms • Label grid or coordinate system • Tangrams	• Measurement vocabulary • Temperature • Simple time line • Metric and US units • Money to $10.00 • Tell time to the minute • Calendar: day, week, month, year • Weeks before and after on a calendar	• Line graphs • Graphs from a table • Patterns in tables and graphs • Data collection
4	• Place value to 1,000,000 • Numbers between zero and one • Decimals to the hundredths • Equivalents in counting money • x and ÷ relationship • Remainder in division • x and ÷ to 12 by recall • ÷ using 1-digit divisor • x two 2-digit numbers • Simple equivalent fractions • Improper fractions, mixed numbers • Estimate solutions • Concept of LCM and GCF • Reduce simple fractions	• Table of values • Change in variables • Distributive property • Predictions using numerical and non-numerical patterns	• Points, lines, planes • Positions on a grid • Coordinate systems • Line symmetry • 3-dimensional objects • Area of rectangle • Similarities and differences of quadrilaterals	• Length to nearest ¼ inch • Multi-step problems • Perimeter of irregular shapes • Simple time line • Time zones and timetables • Celsius and Fahrenheit • Equivalent measures for metric and customary units	• Tables and graphs using different scales • Circle graphs • Probability experiments • Venn diagrams • Data collection

	Number and Operations	Algebra	Geometry	Measurement	Data Analysis and Probability
5	• Place value to billions • Count money and make change • Whole numbers, fractions, decimals • Number theory concepts • Pairs of numbers • Estimation and computation • Round whole numbers • Equivalent fractions, decimals, percents • Multiples, factors, composites, primes • GCF and LCM of two numbers • Reduce and convert fractions • + and – time	• Graph linear equations • Interpret patterns • Algebra formulas • Linear equations • Inequalities and nonlinear equations	• Radius and diameter • Angles • Linear, square and cubic units • Faces, vertices and edges • Perspective drawings • Ray, segment, interior and exterior of an angle • Patterns with tessellations	• Grid and coordinate plane • 3-dimensional objects • Measure of angles • Convert metric • Measure length	• Collect and display data • Mean, median, mode and range • Calculators and computers • Predictions and conjectures based on samples • Population and sample • Outcomes of an event • Frequency tables
6	• Exponents • Associative property of + and x • Whole number operations to fractions, decimals, percents and mixed numbers • Divisibility rules • Round decimals to nearest 1,000ths • Ratio, percent and percentage • Improper fractions, mixed numbers and decimal fractions • +, -, x and ÷ integers • Prime factorization and factor trees • Convert fractions to decimals to percents • Convert fractions to terminating, repeating or rounded decimals • Remainder as a fraction or decimal • Find the percent of a number	• Linear equations • Two-step operations • Solve inequalities • Use a rule to determine a missing number • Compare integers	• Geometry vocabulary • Area of triangles and parallelograms • Circumference and area of circles • Volume and surface areas of prisms • Classify triangles • Parallel, intersecting and perpendicular lines • Use protractor • Fractal patterns • Geometric construction	• Changed dimensions of a figure • Formulas - circumference, area of circles and sectors • Conversions within the same measurement system • Indirect measurement	• Calculate probability • Multiple line graph • Logical inferences from statistical data • Calculate the odds • Test a theoretical probability • Construct a scatter plot • Organized lists and tree diagrams
7	• Scientific notation • Negative and zero exponents • Integers, rational and irrational numbers • Additive inverse property • Distributive property • Properties of operations • Proportions to solve problems • Squares and square roots • Percent of increase and decrease	• Ratios, proportions, averages and percentages • Graph inequalities • Formula used in problem solving • Laws of exponents • Pythagorean Theorem • Simple polynomials	• Area of a trapezoid • Cylinder surface area • Geometric solid volume • Transformations • Angle measures in triangle • Complementary, supplementary and vertical angles • Scale diagrams	• Convert between standard and metric measures • Ratios to solve problems • Scale models • Ancient monetary values • Proportionate time line • Formulas for volume and surface areas of solids • Time zones	• Permutations • Predictions • Multiple bar graph • Circle graphs • Histogram • Stem and leaf plot
8	• Digits in calculations • Irrational numbers • Real numbers, set notation and set operations	• Matrices • Slope and intercept • Values • Arithmetic and geometric sequences • Variables • Linear or nonlinear properties in tables, graphs and equations	• Surface area of various geometric shapes • Volume of spheres • Geometric properties • Sine, cosine and tangent	• Interior and exterior angles • Digits in calculations • Convert Fahrenheit and Celsius	• Combinations from a given set • Box and whisker plot