

# Math Continuum

<p align="center"><b>Preconventional</b> <i>Ages 3-5</i></p>	<p align="center"><b>Emergent</b> <i>Ages 4-6</i></p>	<p align="center"><b>Developing</b> <i>Ages 5-7</i></p>	<p align="center"><b>Beginning</b> <i>Ages 6-8</i></p>	<p align="center"><b>Expanding</b> <i>Ages 7-9</i></p>
<p><b>Number Sense</b> ~ Recognizes some numerals to ten ~ Explores writing numerals</p> <p><b>Algebra</b> ~ Explores patterns in familiar surroundings ~ Begins to replicate patterns with objects</p> <p><b>Geometry</b> ~ Recognizes simple shapes ~ Begins to draw simple shapes</p> <p><b>Measurement</b> ~ Explores using non-standard units to measure</p> <p><b>Data Analysis</b> ~ Collects and counts objects</p>	<p><b>Number Sense</b> ~ Explores one to one correspondence ~ Recognizes numerals to ten and is able to write them with guidance ~ Uses words to describe quantity and their relationships ~ Explores mathematical symbols and their meanings ~ Understands some parts to the whole</p> <p><b>Algebra</b> ~ Can create a repeating pattern with manipulatives ~ Explores the creation of sets using objects</p> <p><b>Geometry</b> ~ Identifies basic shapes ~ Sorts objects by a single attribute ~ Beginning to describe relative locations of objects</p> <p><b>Measurement</b> ~ Explores using non-standard units to measure length, width and height ~ Uses words to describe speed, temperature and size ~ Can recognize some coins ~ Begins to understand the concept of time relative to own activities</p> <p><b>Data Analysis and Probability</b> ~ Predicts, collects and counts objects and begins to explore ways to record that information ~ Sorts information and is able to graph it with guidance</p>	<p><b>Number and Operations</b> ~ Use numbers, including written numerals, to represent and solve quantitative problems ~ Counts objects in a set and creates a set with a given number of objects ~ Compares or orders sets or numerals by using both cardinal and ordinal meanings ~ Models simple joining and separating situations with objects ~ Choose, combine, and apply effective strategies for answering quantitative questions ~ Recognizes the number in a small set ~ Counts and produces sets of given sizes and the number in combined sets ~ Counts backward ~ Skip counts by 5's and 10's to 100</p> <p><b>Algebra</b> ~ Identifies, duplicates and extends patterns</p> <p><b>Geometry</b> ~ Knows and reproduces basic shapes and uses vocabulary that corresponds ~ Identifies and builds symmetry, reconstructs objects</p> <p><b>Measurement</b> ~ Understands procedures to measure length and weight with non-standard units ~ Tells hour on an analog clock ~ Uses monthly calendar as a tool ~ Knows the value of a penny, nickel, and dime; recognizes quarter</p> <p><b>Data Analysis and Probability</b> ~ Sorts an classifies according to specific attributes ~ Performs simple data collection ~ Interprets and creates basic graphs</p>	<p><b>Number and Operations</b> ~ Recognizes and writes numbers 1-100 ~ Develops strategies for adding and subtracting larger whole numbers ~ Uses length based models to model "part-whole", "adding to", "taking away from" and "comparing" strategies ~ Delves into fractions ~ Cements addition and subtraction fact families to 12 ~ Understands the effects of adding and subtracting whole numbers ~ Develops and uses strategies for whole number computations with a focus on addition and subtraction up to two digit addition and subtraction ~ Skip counts by 2's, 5's and 10's ~ Compares and orders one to two digit numbers on a number line</p> <p><b>Algebra</b> ~ Uses concrete, pictorial and verbal representation to develop an understanding of invented and conventional symbolic notations ~ Analyzes how both repeating and growing patterns are generated ~ Learns properties of numbers including odd and even</p> <p><b>Geometry</b> ~ Compose and decompose plane and solid figures ~ Recognizes and creates shapes that have symmetry and part-whole relationships of shapes ~ Develops a background for congruence, measurement and geometric properties</p> <p><b>Measurement</b> ~ Records date using calendars and picture and bar graphs ~ Strengthens the skills of measurement including weight, distance and time ~ Selects appropriate unit and tool for the attribute being measured</p> <p><b>Data Analysis and Probability</b> ~ Represents data using concrete objects and graphs</p> <p><b>Problem Solving</b> ~ Recognizes a variety of problem solving strategies and learns when to apply them ~ Investigates mental arithmetic and logical thinking</p>	<p><b>Number and Operations</b> ~ Understands Base 10 and place value to (at least) 1000. ~ Knows addition and subtraction facts through 20 ~ Solves arithmetic problems by applying knowledge of properties of number, properties of addition (cumulatively and associatively), and models of addition and subtraction ~ Understands adding and subtraction of two and three digit numbers with regrouping ~ Estimates sums and differences and calculate them mentally ~ Develops fluency with efficient procedures such as standard algorithms ~ Understands concept of multiplication including facts through five time five ~ Has beginning fraction skills</p> <p><b>Measurement</b> ~ Develop meaning of linear measurement as an iteration of units and use measurement tools with that understanding ~ Establish facility with measuring lengths and capacity (standard and metric) and weight</p> <p><b>Algebra</b> ~ Can successfully model situations that involve addition and subtraction of whole numbers using objects, pictures and symbols ~ Can observe and replicate patterns to build understanding of multiples and factors ~ Can create and interpret graphs</p> <p><b>Geometry</b> ~ Able to recognize geometric shapes and structures in the environment ~ Compose and decompose two-dimensional shapes they develop foundations for understanding area, fractions, and proportions ~ Understands symmetry ~ Estimates, measures, and computes lengths as they solve problems involving data, space, and movement through space</p>
<p align="center"><b>Bridging</b> <i>Ages 8-10</i></p>	<p align="center"><b>Fluent</b> <i>Ages 9-11</i></p>	<p align="center"><b>Proficient</b> <i>Ages 11-13</i></p>	<p align="center"><b>Independent</b></p>	
<p><b>Numbers and Operations</b> ~ Developing understanding to decimal place value to hundredths and expanded notation and place value to 10,000 ~ Build facility with mental computation by using computational estimation and using paper and pencil strategies ~ Developing understanding of math facts through easy multiplication and division ~ Using a variety of solution strategies, students relate multiplication and division as inverse operations ~ Knows addition and subtraction with regrouping using four-digit numbers ~ Develops ability to identify fractional parts, uses fractions to represent parts of a whole, parts of a set, or points or distances on a number line</p> <p><b>Algebra</b> ~ Developing the ability to find patterns on number grids and solve "What's My Rule?" tables and Frames and Arrows charts</p> <p><b>Geometry</b> ~ Beginning to identify, draw and label segments, lines and rays, angles while identifying symmetry ~ Beginning to identify parallel and intersecting lines ~ Investigate, describe, and reason about decomposing, combining, and transforming polygons to make other polygons</p> <p><b>Measurement</b> ~ Can tell time to the nearest minute ~ Develop facility in measuring with fractional parts of linear units ~ Knows how to measure to the nearest ¼ inch and whole centimeter ~ Select appropriate units, strategies, and tools to solve problems involving perimeter</p> <p><b>Data Analysis and Probability</b> ~ Developing ability to predict outcomes and discuss probability ~ Able to construct and analyze frequency tables, bar graphs, picture graphs, and line plots</p> <p><b>Problem Solving</b> ~ Developing ability to learn and practice specific problem solving strategies</p>	<p><b>Numbers and Operations</b> ~ Understands place value of whole numbers to 100,000 ~ Learn to use decimals as equivalencies to fractions, compare and order decimals, and estimate decimal or fraction amounts in problem solving ~ Able to add, subtract, multiply and divide whole numbers ~ Able to add and subtract decimal numbers ~ Identifies the relationship between decimal, fraction and percentages ~ Simplifies fractions</p> <p><b>Algebra</b> ~ Recognizes and predicts patterns ~ Solves simple equations with unknowns ~ Develops quick methods of recall for basic math facts</p> <p><b>Geometry</b> ~ Identifies polygons and circles ~ Identifies simple 3-D shapes ~ Uses coordinates ~ Identifies parallel and perpendicular lines ~ Recognizes, measures and classifies angles and produces line and rotational symmetry ~ Designs and analyzes transformations through tessellations ~ Constructs circles and some polygons using a compass</p> <p><b>Measurement</b> ~ Calculates area, perimeter and volume of simple shapes ~ Measures (using correct units) money, length, area, volume, weight, capacity, and temperature (metric and standard)</p> <p><b>Data Analysis and Probability</b> ~ Creates and understands graphs, tables, line plots, and charts ~ Recognizes probabilities and predicts outlines ~ Apply the understanding of place value to develop and use stem-and-leaf-plots ~ Identifies minimum, maximum and range</p> <p><b>Problem Solving</b> ~ Organizes and manipulates relevant data ~ Chooses appropriate strategies to solve problems</p>	<p><b>Numbers and Operations</b> ~ Understands place value, models for division and the relationship between division and multiplication through millions and millionths ~ Demonstrates an understanding of multiplying and dividing fractions, decimals, percents and landmark statistics ~ Understands and can use standard algorithms ~ Forms ability to choose the most useful form of quotient for the solution, and interpret it correctly ~ Able to add, subtract, multiply and divide fractions and decimals ~ Able to multiply and divide large numbers involving multi digit dividends</p> <p><b>Algebra</b> ~ Can search to function rules and write and solve equations with inequalities ~ Create graphs of equations ~ Explore prime and composite numbers, use factors and multiples as they add and subtract fractions</p> <p><b>Geometry</b> ~ Identifies properties of 2-D and 3-D figures, polygons and angles ~ Understands perpendicular lines and congruencies ~ Relates two to three dimensional shapes and quantifies volume ~ Use area formulas of shapes to solve problems</p> <p><b>Measurement</b> ~ Understands basic units of length, weight, capacity, volume and temperature ~ Estimates and makes precise measurements in standard and metric units using protractors and rulers and develops strategies for estimative calculations</p> <p><b>Data Analysis and Probability</b> ~ Predicts outcome ~ Understands the concept of probability ~ Collects and organizes data ~ Learns how to interpret statistics from graphs, charts and tables</p> <p><b>Problem Solving</b> ~ Solves word problems using a variety of operations ~ Applies specific problem solving strategies</p>	<p><b>Number and Operations</b> ~ Explains numbers by comparing and sequencing whole numbers, fractions, percents, exponents and negative numbers (real numbers) ~ Divides and multiplies fractions and understands ratio and rate ~ Distinguish multiplicative comparisons from additive comparisons ~ Performs operations on real numbers and give mixed number and decimal solutions to division and multiplication problems</p> <p><b>Algebra</b> ~ Finds and is able to write functional rules for linear and simple exponential relationships and patterns ~ Expand the repertoire of problems that they can solve by using multiplication and division ~ Construct and analyze tables ~ Use mathematical expressions to solve problems ~ Solve simple equations by using number sense, properties of operations, and the idea of maintaining equality on both sides of an equation</p> <p><b>Geometry</b> ~ Is able to understand and identify properties and relationships of plane geometry ~ Able to find areas or volumes from lengths</p> <p><b>Measurement</b> ~ Compares different measurable attributes of polygons and 3-D shapes (height, length, weight, capacity, area, volume and perimeter)</p> <p><b>Data Analysis and Probability</b> ~ Questions different interpretations of the same data ~ Is able to consider the problem, collect and record data, describe and interpret data and develop hypotheses based on the data</p> <p><b>Problem Solving</b> ~ Applies associative and commutative laws to problem solve and check work</p>	