

<b>MATH OPERATIONS</b>			
<b>Entering 4th Grade</b>	<b>Math I</b>	<b>Math II</b>	<b>Intro to Pre-Algebra &amp; Pre-Geometry</b>
<p>Recognizes mathematical symbols in a variety of contexts</p> <p>Consistently demonstrates knowledge of quantity</p> <p>Demonstrates the concept of place value</p> <p>Accurately identifies place values and constructs numbers using concrete materials to 9,999,999</p> <p>Identifies place values and constructs numbers using concrete materials to 9,999,999,999</p> <p>Accurately demonstrates and verbalizes a fundamental understanding of addition and subtraction</p> <p>Accurately demonstrates and verbalizes dynamic addition and subtraction with concrete materials</p> <p>Accurately demonstrates and verbalizes dynamic addition and subtraction on paper</p> <p>Memorizes addition and subtraction facts</p> <p>Accurately demonstrates and verbalizes</p>	<p><i>Introduction to the history of mathematics</i></p> <p><b>Place Value</b></p> <p>Consistently work with numbers 11–19 to gain foundations for place value</p> <p>Demonstrates the ability to read and write numerals for a whole number through millions</p> <p>Demonstrates the ability to extend the counting sequence.</p> <p>Demonstrates the ability to read and write numerals for a whole number through millions</p> <p>Consistently uses place value understanding and properties of operations to perform multi-digit arithmetic</p> <p><b>Operations and Pre-Algebraic Thinking</b></p> <p>Demonstrates how to add and subtract multi-digit problems with regrouping abstractly</p>	<p><i>Introduction to the history of mathematics</i></p> <p><b>Place Value</b></p> <p>Consistently uses place value understanding and properties of operations to perform multi-digit arithmetic</p> <p>Understanding of place value for multi-digit whole numbers.</p> <p><b>Operations and Pre-Algebraic Thinking</b></p> <p>Demonstrates proper use the four operations with whole numbers to solve problems.</p> <p>Demonstrates various strategies to solve math problems involving the four basic operations</p> <p>Knowledge of factors and multiples</p> <p>Consistently generate and analyze patterns</p>	<p><i>Introduction to the history of mathematics</i></p> <p><b>Prime Factors</b></p> <p>Understanding of prime factorization of composite numbers</p> <p>Practice using powers and exponents in expressions</p> <p><b>Order of Operations</b></p> <p>Consistently find the value of expressions using the order of operations</p> <p>Consistently complete function tables and find function rules</p> <p><b>Graphing</b></p> <p>Understands how to display, interpret, and analyze data in graph format</p> <p>Consistently find and interpret measures of central tendency</p> <p><b>Integers &amp; Decimals</b></p>

Entering the 4th Grade	Math I	Math II	Intro to Pre-Algebra & Geometry
<p>a understanding of multiplication and division</p> <p>Accurately demonstrates and verbalizes static multiplication and division on paper</p> <p>Accurately demonstrates and verbalizes static multiplication and division with concrete materials</p> <p>Accurately demonstrates and verbalizes a fundamental understanding of dynamic multiplication and division</p> <p>Accurately demonstrates and verbalizes dynamic multiplication and division with concrete materials</p> <p>Completes memorization of multiplication and division facts</p> <p>Demonstrates and solves dynamic multiplication problems on paper</p> <p>Demonstrates and solves static division problems on paper</p> <p>Accurately demonstrates orderliness and accuracy in all operations</p> <p>Accurately demonstrates an understanding of congruence, symmetry, and probability</p> <p>Recognizes the difference between odd and even numbers</p> <p>Accurately and consistently demonstrates an understanding and</p>	<p>Consistent reinforcement of addition, subtraction, multiplication, division operations, factors/multiples, divisibility, percent, ratio, proportion, exponents</p> <p>Identifies the rule for multiplying x10, x100, x1000 using golden beads</p> <p>Consistently able to multiply multi-digit numbers by a single digit or multiple of ten abstractly</p> <p>Consistently uses concrete materials to multiply and divide by two or more digits</p> <p>Rounds numbers and estimate sums and differences</p> <p>Demonstrates how to solve problems involving multiplication and division</p> <p>Understand the properties of multiplication and the relationship between multiplication and division</p> <p>Consistently multiplies and divides within 100.</p> <p>Consistently solves problems involving the four operations, and identify and explain patterns</p>	<p>Consistently add, subtract, multiply and divide whole numbers and decimals with ease</p> <p>Demonstrates knowledge of multiplication tables to twelve</p> <p>Demonstrate mastery of math facts (multiplication, division)</p> <p>Demonstrates knowledge of adding &amp; subtracting fractions</p> <p>Consistently evaluate answers for reasonability</p> <p>Solves problems with money</p> <p>Able to divide by a two digit number</p> <p>Demonstrates ability to correctly solve division word problems (4,5)</p> <p>Demonstrates the ability to multiply fractions</p> <p>Demonstrates the ability to correctly solve reciprocal fractions</p> <p>Demonstrates the ability to correctly divide fractions</p> <p><b>Graphing</b></p>	<p>Understanding of integers and their relationship to real-world data</p> <p>Knowledge of how to perform operations using decimals and fractions</p> <p>Understanding of the relationship between fractions, decimals, and percent</p> <p>Consistently compare and order integers</p> <p>Consistently perform operations using integers</p> <p>Knowledge of mathematical properties</p> <p>Understanding of simplifying fractions and converting between mixed numbers and improper fractions</p> <p>Compares and orders fractions</p> <p><b>Pre-Algebra</b></p> <p>Demonstrates knowledge of Binomials and trinomials, solving for the unknown, variables, squaring/cubing</p> <p>Consistently uses letters, boxes, or other symbols to</p>

Entering the 4th Grade	Math I	Math II	Intro to Pre-Algebra & Geometry
<p>strategy of word problems</p> <p>Correctly identifies a word problem</p> <p>Writes the proper equation to solve a word problem</p> <p>Accurately solves and records the answer to a word problem, including units</p> <p>Consistently tells time by reading a clock in hour, half hour, quarter hour, and five-minute sequences</p> <p>Reads and writes the time to the minute</p> <p>Solves "Telling Time" word problems</p> <p>Recognizes names &amp; values of coins and bills</p> <p>Accurately adds and subtracts amounts of money using cents and dollar signs</p> <p>Efficiently exchanges coins and makes change</p> <p>Analyzes and gathers information from different types of complex graphs</p> <p>Demonstrates a fundamental understanding of fractions and fraction equations</p> <p>Identifies fractions and fraction equations</p> <p>Writes fractions and fraction equations</p>	<p>in arithmetic.</p> <p>Knowledge of multiplication tables to twelve</p> <p><b>Number lines &amp; graphing</b></p> <p>Consistently solves number sentences with missing parts</p> <p>Identify, locate, and plot a number pair on a graph</p> <p>Able to read different kinds of graphs</p> <p>Consistently organizes data into appropriate bar graphs, line graphs, frequency tables and line plots</p> <p><b>Decimals</b></p> <p>Decimals, Multiply whole Numbers, Divide Whole Numbers, Equations and</p> <p>Function Tables, Display and Interpret Data, Fraction concepts</p> <p><b>Calculation and Processes</b></p> <p>Consistently problem-solves with two or more processes</p> <p>Consistently solve problems involving three digit quotient</p>	<p>Demonstrates how to prepare picture, circle, bar and line graphs from gathered data</p> <p>Demonstrates reading making inferences from picture, circle, bar and line graphs</p> <p>Demonstrates using a line graph</p> <p><b>Decimals</b></p> <p>Demonstrates reading and writing decimals</p> <p>Demonstrates rounding to nearest 10th, 100th, 1,000th</p> <p>Demonstrates adding decimals</p> <p>Demonstrates subtracting decimals</p> <p>Demonstrates multiplying decimals</p> <p>Demonstrates dividing decimals</p> <p>Demonstrates using a mileage table</p> <p>Demonstrate decimal to fraction conversion</p> <p>Consistently solve a variety of problems, including estimation,</p>	<p>stand for any number in simple expressions or equations</p> <p>Consistently interpret and evaluate mathematical expressions</p> <p>Demonstrates use of formulas</p> <p>Knowledge of how to manipulate equations</p> <p><b>Coordinate Planes</b></p> <p>Understanding of the coordinate plane and ordered pairs</p> <p>Knowledge of translations, reflections, and rotations on coordinate planes</p> <p><b>Ratios</b></p> <p>Understanding of ratios, rates, unit rates, ratio tables, and proportions</p> <p>Understand and describe arithmetic sequences</p> <p>Knowledge of and practice measurement using both metric and customary systems</p>

Entering the 4th Grade	Math I	Math II	Intro to Pre-Algebra & Geometry
	<p>Introduction and understanding of factorization</p> <p>Can divide up to 4 digit dividends by 1 and z digit numbers.</p> <p><b>Statistics, Data Analysis and Probability</b></p> <p>Consistently organize, represent, and interpret data numerical and categorical data and clearly communicate their findings</p> <p>Demonstrate predictions for simple probability situations</p> <p><b>Mathematical Reasoning</b></p> <p>Consistently make decisions about how to approach problems</p> <p>Consistently use strategies, skills, and concepts in finding solutions: estimation, and precise calculations</p> <p>Consistently move beyond a particular problem by generalizing to other situations</p> <p><b>Operations / Numeration</b></p> <p>Consistently identify numerical quantities, numerical symbols, place value through millions,</p>	<p>using decimals</p> <p><b>Pre-Algebra</b></p> <p>Demonstrates the calculation of square roots (5,6)</p> <p>Demonstrates the calculation of the square of a binomial</p> <p>Calculation of a trinomial</p> <p>Understand and apply knowledge of angle relations</p> <p><b>Time</b></p> <p>Consistently reads and writes Roman Numerals</p> <p>Demonstrates time conversions</p> <p>Demonstrates adding and subtracting time</p> <p><b>Word Problems</b></p> <p>Consistently writes word problems requiring addition and subtraction of fractions, mixed numbers, and measure of time</p> <p>Consistently write word problems that require multiplication and division of fractions, mixed numbers, and/or number sequences</p>	<p><b>Pre-Geometry</b></p> <p>Knowledge of finding an area of rectangles and squares</p> <p>Understanding of displaying, interpreting, and analyzing data in graph format</p> <p>Consistently measure and classify angles</p> <p>Understand the classification of triangles</p> <p>Consistently find the missing angle of a triangle.</p> <p>Understands circumference</p> <p>Consistently find the area of parallelograms</p> <p>Consistently find the volume and surface area of rectangular prisms</p>

Entering the 4th Grade	Math I	Math II	Intro to Pre-Algebra & Geometry
	<p>prime numbers, rounding, integers/number line</p> <p><b>Fractions</b></p> <p>Consistently names addition, subtraction, multiplication, division, simplifying and reducing fractions</p> <p>Consistently writes fractions and decimals, round fractions and mixed numbers</p> <p>Subtract fractions with like denominators, estimate products, and fractions, and multiply and divide fractions &amp; mixed numbers</p> <p>Understands simplifying fractions and converting between mixed numbers and improper fractions</p> <p>Demonstrates how to read and write fractions for parts of a group</p> <p>Compare and order fractions</p> <p>Uses concrete materials to identify fraction equivalents</p> <p>Identifies the sum/difference of two fractions with same denominators</p>		

Entering the 4th Grade	Math I	Math II	Intro to Pre-Algebra & Geometry
	<p>Consistently solves real-world problems with whole numbers, fractions, and money</p> <p><b>Money</b></p> <p>Identifies and knows the value of US coins and bills</p> <p><b>Word Problems</b></p> <p>Demonstrates knowledge of word problems and critical thinking,</p> <p>Demonstrates knowledge of estimating, graphing, patterns, relationships</p> <p><b>Estimation</b></p> <p>Can round, estimate, add and subtract whole numbers and decimals.</p> <p>Estimates and multiplies up to 3 digit numbers by 1 and 2 digit numbers.</p> <p>Makes predictions using probability</p>		

GEOMETRY & MEASUREMENT

<p>Identifies and describes parts of an angle</p> <p>Discriminates between acute, right, obtuse, straight, reflex, and whole angles</p> <p>Demonstrates knowledge of the relationship between two angles</p> <p>Identifies the types of angles formed by two straight lines and a transversal</p> <p>Identifies multiple tools for measurement</p> <p>Measures to the whole value of and to the nearest value of the following units of measure:</p> <ul style="list-style-type: none"> <li>● Millimeter</li> <li>● Centimeter</li> <li>● Decimeter</li> <li>● Kilometer</li> <li>● Inch</li> <li>● Foot</li> <li>● Yard</li> <li>● Mile</li> </ul> <p>Measures in halves &amp; quarters of an inch</p> <p>Estimates length to the nearest inch, foot, yard, centimeter, decimeter, and meter</p>	<p>Identifies and describes shapes (squares, circles, triangles, rectangles, hexagons, cubes, cones, cylinders, and spheres)</p> <p>Analyze, compare, create, and compose shapes</p> <p>Reason with shapes and their attributes.</p> <p>Draw and identify lines and angles, and classify shapes by properties of their lines and angles</p> <p>Use of formulas to define perimeters</p> <p>Recognize that rectangles having the same area can have different parameters</p> <p>Students use 2-dimensional coordinate grids to represent points and graph lines</p> <p>Understanding of X-axis for the horizontal line and Y-axis for vertical line</p> <p>Students demonstrate an understanding of plane and solid geometric objects and use this</p>	<p>Graph points on the coordinate plane to solve real-world and mathematical problems</p> <p>Develop an understanding of fractions as numbers</p> <p>Extend understanding of fraction equivalence and ordering</p> <p>Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers</p> <p>Understand decimal notation and compare decimal fractions</p> <p><b>Measurement</b></p> <p>Solves problems involving measurement and estimation of time intervals, liquid volumes, and objects</p> <p>Understand concepts of area and relate area to multiplication and to addition.</p> <p>Recognize perimeter as an attribute of plane figures and</p>	
---	---	--	--

Entering the 4th Grade	Math I	Math II	Intro to Pre-Algebra & Geometry
<p>Measures and estimates distances in miles from a travel chart</p> <p>Transposes between inches and feet, expressing distances in both units and their combination</p> <p>Recognizes and identifies the following parts of a triangle:</p> <ul style="list-style-type: none"> <li>• Altitude</li> <li>• Median</li> <li>• Axis</li> <li>• Centers</li> <li>• Sides</li> <li>• Angles</li> </ul> <p>Accurately measures perimeter in inches and centimeters</p> <p>Accurately measures the area of a rectangle and triangle</p> <p>Accurately measures in cubic inches</p> <p>Accurately measures weight in ounces, pounds, and tons</p> <p>Accurately estimates the weight of objects in ounces, pounds, and tons</p> <p>Recognizes, identifies, and discriminates between the range of triangles</p> <p>Accurately measures volume in cups, pints, quarts, gallons, milliliters, and liters</p> <p>Accurately interchanges cups, pints,</p>	<p>knowledge to show relationships and solve problems</p> <p>Understand parallel and perpendicular, radius and diameter, bilateral and rotational symmetry</p> <p>Knowledge of angle nomenclature</p> <p>Know the prisms and different types of triangles</p> <p>Knowledge of the nomenclature of quadrilaterals</p> <p><b>Measurement</b></p> <p>Identifies an appropriate unit of measurement to measure length, weight, or temperature</p> <p>Consistently uses metric and standard systems for measurement and recognizes each system</p> <p>Compare measurable attributes.</p> <p>Classify objects and count the number of objects in each category</p> <p>Measure lengths indirectly and by</p> <p>Represent and interpret data.</p>	<p>distinguish between linear and area measures.</p> <p>Consistently solves problems involving measurement and conversion of measurements from a larger to smaller units</p> <p>Understand the concepts of angle and measure angles</p>	



Entering the 4th Grade	Math I	Math II	Intro to Pre-Algebra & Geometry
<p>quarts, and gallons</p> <p>Accurately interchanges teaspoons, tablespoons, cups, pints, and gallons</p> <p>Measures in fractions of a cup</p> <p>Accurately estimates the amount of liquid in teaspoons, tablespoons, cups, pints, quarts, and gallons, milliliters, and liters</p> <p>Reads and records temperatures on a thermometer in Fahrenheit and Celsius</p>	<p>Measure and estimate lengths in standard units</p> <p>Relate addition and subtraction to length.</p> <p>Review measurement of objects of length, weight, liquids in metric and English system</p> <p>Identifies an appropriate unit of measurement to measure length, weight, or temperature</p> <p>Consistently uses metric and standard systems for measurement and recognizes each system</p> <p>Consistently reads the temperature on a Fahrenheit or Celsius thermometer</p>		