

Number Sense & Numeration		
Third Grade	Fourth Grade	Fifth Grade
<b>Competencies</b>		
<ul style="list-style-type: none"> <li>• Read, write, order, model, compare, and identify place value of digits in whole numbers to 10,000. Use <math>&lt;</math> and <math>&gt;</math> symbols with whole numbers. Read and write tenths and hundredths as they relate to money.</li> <li>• Round whole numbers to the nearest 10 or 100. Know when an exact solution is required and when it's more appropriate to estimate.</li> <li>• Compose and decompose (e.g., put together and take apart) numbers to 10,000 by place value. Use expanded notation to represent numbers. (e.g., <math>3,206 = 3,000 + 200 + 6</math>)</li> <li>• Locate and place whole numbers on a number line.</li> <li>• Understand, model, read, write, order, and compare common fractions (e.g., <math>\frac{1}{2}</math>, <math>\frac{1}{4}</math>, <math>\frac{1}{3}</math>, <math>\frac{1}{6}</math>, and <math>\frac{1}{8}</math>) using concrete models and visual representations.</li> <li>• Characterize numbers as odd or even in several ways. (e.g., divisible by 2, a double, a double and 1 more, etc.) Explain, demonstrate, and apply the fact that odd plus odd is even, and odd plus even is odd.</li> </ul>	<ul style="list-style-type: none"> <li>• Read, write, order, model, compare, and identify place value of digits in whole numbers to 1,000,000. Model, recognize, order, and compare common fractions (halves, thirds, fourths, fifths, sixths, eighths, tenths, twelfths, sixteenths) and decimals (tenths and hundredths).</li> <li>• Round 1-, 2-, or 3-digit whole numbers to the nearest 10, 100, and 1,000 for addition and subtraction problems and recognize which place (e.g., 1's, 10's, 100's, or 1,000's) will be the most helpful in estimating an answer.</li> <li>• Use a variety of physical and visual models to conceptualize fractions and interpret different meanings for fractions (e.g., equal parts of a unit whole, parts of a set, length, area, money, time).</li> <li>• Create, model, and recognize equivalent forms of common fractions and decimals to hundredths (e.g., <math>0.75 = \frac{3}{4}</math>).</li> <li>• Locate common fractions and decimals to hundredths on a number line.</li> </ul>	<ul style="list-style-type: none"> <li>• Order, model, locate on a number line, and compare fractions, decimals (tenths, hundredths, thousandths), and commonly used percentages (10%, 25%, 50%, and 75%).</li> <li>• Round (with ranges from the nearest hundredth to the nearest ten-thousand) to estimate answers to calculations.</li> <li>• Demonstrate meanings for fractions in different contexts (area, set, number line) and recognize relationships between different forms such as mixed numbers, improper fractions, and decimals.</li> <li>• Understand fractions as quotients of whole numbers.</li> <li>• Create, model, and recognize equivalent forms of common fractions, decimals, and percents. (<math>0.20 = \frac{1}{5}</math>; <math>0.20 = 20\%</math>; <math>20\% = \frac{1}{5}</math>)</li> <li>• Explain prime and composite numbers, factors, and multiples.</li> </ul>
<b>Experiences</b>		
<ul style="list-style-type: none"> <li>• Explore different meanings for fractions (e.g., parts of a unit whole, parts of a set, length, area, money, time).</li> <li>• Explore equivalent fractions.</li> <li>• Explore fractions and decimals as two representations of the same quantities in the context of money (e.g., 50¢ is <math>\frac{1}{2}</math> of a dollar, 75¢ is <math>\frac{3}{4}</math> of a dollar).</li> </ul>	<ul style="list-style-type: none"> <li>• Explore equivalent fractions and use equivalence to compare fractions. (e.g., <math>\frac{3}{6} = \frac{1}{2}</math>, so <math>\frac{2}{6}</math> is less than <math>\frac{1}{2}</math>)</li> <li>• Explore concepts of prime and composite numbers, factors, multiples, and negative numbers.</li> <li>• Explore fractions as quotients of whole numbers.</li> </ul>	<ul style="list-style-type: none"> <li>• Explore visual representations of equivalent ratios and compare part-to-part relationships.</li> <li>• Explore concepts of negative numbers. (e.g., on a number line, in counting, in temperature, in "owing")</li> </ul>

<b>Computation</b>		
<b>Third Grade</b>	<b>Fourth Grade</b>	<b>Fifth Grade</b>
<b>Competencies</b>		
<ul style="list-style-type: none"> <li>• Use strategies (e.g., doubles, neighbors) in the development and demonstration of computational fluency with addition and subtraction facts to 20.</li> <li>• Use models, words, and/or numbers to demonstrate the meaning of addition (joining two or more sets) and subtraction (taking away or finding the difference between two sets). Use the relationship between addition and subtraction (e.g., fact families) to solve problems.</li> <li>• Add and subtract up to 3-digit numbers with and without regrouping using models and a variety of efficient paper/pencil and mental strategies.</li> <li>• Use models, words, and/or numbers to demonstrate an understanding of multiplication and division as repeated addition/subtraction, fair shares, equal groups of objects, arrays, or skip counting.</li> <li>• Demonstrate computational fluency with multiplication facts up to <math>5 \times 10</math>. Develop and use strategies for multiplication facts up to <math>10 \times 10</math>. Use various strategies to multiply a 2-digit number by a 1-digit number.</li> <li>• Use estimation strategies such as rounding and front-end loading to solve problems and check the accuracy of the solutions. Identify and apply the operation needed (addition, subtraction, multiplication, or division) for solving a problem.</li> <li>• Count, add, subtract, and estimate money amounts up to \$10. Make change from \$5. Use decimal notation to show money amounts to \$10.</li> <li>• Use the calculator as a problem solving tool to investigate patterns, find the sum and difference of multiple 2- and 3-digit combinations, and find the average of a set of data.</li> </ul>	<ul style="list-style-type: none"> <li>• Add and subtract up to 4-digit numbers with and without regrouping using models and a variety of efficient paper/pencil and mental strategies.</li> <li>• Know and fluently use multiplication facts through <math>10 \times 10</math>. Develop efficient strategies for quickly determining division facts with divisors to 10 and dividends to 100.</li> <li>• Develop efficient ways to determine factors of whole numbers to 100 using an understanding of number relationships and models such as arrays.</li> <li>• Mentally add and subtract multiples of 10, 100, or 1000 to or from a number. Mentally multiply or divide multiples of 10 or 100 (e.g., <math>40 \times 70</math> or <math>2700 \div 30</math>).</li> <li>• Use different models of division such as grouping, sharing, and repeated subtraction to solve problems (including situations that involve remainders).</li> <li>• Multiply and divide 2- and 3-digit numbers by 1-digit numbers, using a variety of concrete, visual, and paper/pencil methods.</li> <li>• Add and subtract commonly used fractions and decimals to hundredths using concrete models, money amounts, and visual representations.</li> <li>• Solve addition, subtraction, multiplication, and division story problems using a variety of efficient paper/pencil and mental strategies.</li> <li>• Select methods and tools (rounding, estimation, paper/pencil, calculator) appropriate to a particular context for operations with whole numbers.</li> <li>• Apply the commutative, associative, distributive, and identity properties to calculations with whole numbers.</li> </ul>	<ul style="list-style-type: none"> <li>• Use addition, column addition, and subtraction with multi-digit numbers (5 or more digits) in an efficient manner, making judicious use of mental strategies, estimation, rounding, and calculators.</li> <li>• Know and fluently use the multiplication and division facts through 10's, as well as factors and multiples through 100.</li> <li>• Multiply 2-digit by 2-digit numbers using a variety of efficient mental and paper/pencil strategies. Multiply by powers of ten up to 1,000 to simplify calculations.</li> <li>• Divide 3-digit by 1-digit numbers with and without remainders using a variety of efficient mental and paper/pencil strategies.</li> <li>• Calculate and explain addition and subtraction of commonly used fractions and decimals to thousandths.</li> <li>• Describe, compare, choose, and accurately use strategies and operations for a variety of problem situations.</li> <li>• Identify the order of operations in a multi-step problem.</li> <li>• Estimate the results of operations performed on whole numbers, fractions, and decimals, and use the estimate to determine the reasonableness of the final answer.</li> <li>• Apply the commutative, associative, distributive, and identity properties to calculations with whole numbers and decimals.</li> </ul>
<b>Experiences</b>		
<ul style="list-style-type: none"> <li>• Explore mental addition and subtraction of multiples of 10, 100, or 1000 to or from a number.</li> <li>• Explore the concept of division with and without remainders through solving story problems and creating multiplication/division fact families to go along with arrays.</li> <li>• Explore the commutative, associative, and distributive properties of multiplication, as well as the special properties of 0 and 1 in multiplication.</li> </ul>	<ul style="list-style-type: none"> <li>• Explore column addition with multi-digit numbers and addition, subtraction, and estimation with larger numbers (5 or more digits).</li> </ul>	<ul style="list-style-type: none"> <li>• Compute and perform multiplication and division of simple fractions, and apply these procedures to solve problem situations.</li> <li>• Use percent models (such as a Hundreds Grid) to interpret current events news stories and advertisements that relate to students' lives.</li> <li>• Determine common percentages of a number (e.g., 10%, 20%, 50%, 75%) and estimate percentages by rounding.</li> </ul>

Algebraic Thinking		
Third Grade	Fourth Grade	Fifth Grade
Competencies		
<ul style="list-style-type: none"> <li>Sort a collection of objects by a variety of attributes and determine how a collection of objects has been sorted by examining evidence (e.g., a 2-circle Venn diagram level of complexity).</li> <li>Describe, extend, and make verbal and written generalizations about numeric and geometric patterns to make predictions and solve problems (e.g., to figure out how many tile it takes to build the 10th arrangement of the pattern below—just add 10 three times and put one more in the middle).</li> <li>Extend number patterns that involve adding or multiplying a single-digit number. (e.g., 4, 7, 10, 13... or 3, 6, 9, 12...)</li> <li>Determine one quantity when given the other based on a simple relationship (e.g., using a T-chart to determine the number of wheels when given the total number of cars).</li> <li>Translate problem-solving situations into expressions and equations.</li> </ul>	<ul style="list-style-type: none"> <li>Describe, extend, and make verbal and written generalizations about numeric and geometric patterns to make predictions and solve problems (e.g., If <math>\frac{2}{8} = \frac{1}{4}</math> and <math>\frac{4}{8} = \frac{2}{4}</math>, then <math>\frac{6}{8}</math> must equal <math>\frac{3}{4}</math>).</li> <li>Extend number patterns with both whole numbers and decimals that grow by common differences, increasing differences, or simple multiples, such as doubling (e.g., 2, 4, 6, 8... or 1, 3, 6, 10... or 1, 2, 4, 8, 16...)</li> <li>Represent and analyze patterns and functions using words, tables, graphs, or number sentences.</li> <li>Create or complete a table of values given a specific rule. Describe the rule governing the relationship between two values in a table. (e.g., Every time you put a number in, it comes out with 3 more added on.)</li> <li>Represent the idea of an unknown quantity or variable as a letter or symbol in an expression or equation. (e.g., <math>n + 6 = 9</math>)</li> <li>Select appropriate operational and relational symbols to make an equation or inequality true (e.g. <math>15 \times 4 \square 10 \times 12</math>).</li> </ul>	<ul style="list-style-type: none"> <li>Make generalizations about patterns that help solve problems (e.g., I know that the value of the 25th odd number is 49 because you just double the arrangement number and subtract 1 with odd numbers).</li> <li>Identify, describe, and compare situations with constant or varying rates of change.</li> <li>Represent and analyze patterns and functions using words, tables, graphs, or simple algebraic expressions.</li> <li>Identify or describe a situation that may be modeled by a given graph (e.g., the growth of a plant over a 2-week period might be modeled by a line graph).</li> <li>Identify and represent whole number data on the first quadrant of a coordinate grid.</li> <li>Use letters, boxes, or other symbols to stand for unknown quantities in expressions or equations.</li> <li>Represent and evaluate algebraic expressions involving a single variable.</li> <li>Use order of operations (including parentheses) to solve problems.</li> </ul>
Experiences		
<ul style="list-style-type: none"> <li>Explore the idea of selecting appropriate numbers to make an equation or inequality true. (e.g. <math>3 \times 4 = 2 \_ 6</math>).</li> </ul>	<ul style="list-style-type: none"> <li>Identify or describe a situation that may be modeled by a given graph (e.g., the growth of a plant over a 2-week period might be modeled by a line graph).</li> <li>Explore situations that demonstrate constant or varying rates of change.</li> </ul>	<ul style="list-style-type: none"> <li>Investigate how a change in one variable relates to a change in a second variable.</li> <li>Supply a missing element in and explore possible rules that extend number patterns involving multiplication or division.</li> </ul>

<b>Data Analysis &amp; Probability</b>		
<b>Third Grade</b>	<b>Fourth Grade</b>	<b>Fifth Grade</b>
<b>Competencies</b>		
<ul style="list-style-type: none"> <li>• Read and interpret a wide variety of graphs, including graphs in which each division stands for more than 1 item.</li> <li>• Determine the mode and range of a set of data.</li> <li>• Collect, organize, and display the results of surveys or experiments by constructing line plots, bar graphs, line graphs, and/or pictographs. Label columns and rows and create appropriate titles for graphs.</li> <li>• Draw conclusions, make predictions, and draw inferences from tables, tally charts, pictographs, line graphs, pie graphs, bar graphs, and Venn diagrams.</li> <li>• Predict the likelihood of a particular outcome based on the initial conditions of a simple game or activity involving spinners, coins, or number cubes. Record and systematically keep track of the outcomes when an event is repeated many times.</li> </ul>	<ul style="list-style-type: none"> <li>• Read, interpret, and construct a wide variety of graphs, including bar, line, double line, line plots, pictographs, and circle (pie) graphs.</li> <li>• Determine the mode, median, and range of a set of data.</li> <li>• Devise and conduct surveys and experiments; systematically collect and record data; draw, support, and communicate conclusions based on data collected.</li> <li>• Predict and represent all possible outcomes for a simple probability situation in an organized way (e.g., tables, grids, tree diagrams). Solve simple counting problems. (“James has 3 pairs of pants and 4 shirts.) How many different outfits can he wear?”</li> <li>• Predict the likelihood of an outcome prior to an experiment involving spinners, number cubes, or coins.</li> <li>• Express the outcome of such experiments verbally and numerically using both whole numbers and fractions (e.g., 3 out of 4 or <math>\frac{3}{4}</math>), and compare predicted probability with the actual results.</li> <li>• Describe the probability of various outcomes or events using such terms as impossible, unlikely, somewhat likely, very likely, certain, and equally likely.</li> </ul>	<ul style="list-style-type: none"> <li>• Interpret and construct a wide variety of graphs, including bar, line, and circle graphs; first quadrant plots; and tables to display collected data and to provide evidence for conclusions.</li> <li>• Determine the mode, median, mean (average), and range of a set of data.</li> <li>• Compare two related sets of data using measures of variability (range) and central tendency (mean, median, and mode) using concrete materials, tables, and computation.</li> <li>• Compare different representations of the same data and evaluate how well each representation shows important aspects of the data.</li> <li>• Determine possible outcomes in a situation. Compare experimental probability to the theoretical probability of a particular outcome.</li> <li>• Analyze events or games of chance to determine the theoretical probability of an event occurring. Express that probability as a ratio (fraction or decimal).</li> </ul>
<b>Experiences</b>		
<ul style="list-style-type: none"> <li>• Investigate situations in which the more data one collects, the closer the actual outcome is to the predicted outcome.</li> <li>• Explore the median of a set of data.</li> <li>• Explore averaging problems by leveling off columns of cubes or base ten pieces.</li> <li>• Explore counting problems such as, “Sarah has 2 kinds of bread and 3 kinds of cheese. How many different kinds of sandwiches can she make?”</li> </ul>	<ul style="list-style-type: none"> <li>• Investigate the fact that probability cannot determine an individual outcome, but can be used to predict the likely frequency of an outcome.</li> <li>• Explore the concept and process of finding the mean (the average); develop a variety of strategies for estimating and finding the mean.</li> </ul>	<ul style="list-style-type: none"> <li>• Explore basic concepts of sampling, including the fact that larger samples yield better results and the need for representative samples.</li> </ul>

Measurement		
Third Grade	Fourth Grade	Fifth Grade
<b>Competencies</b>		
<ul style="list-style-type: none"> <li>• Explain the need for using standard units, and select the most appropriate tool and unit to measure length, weight, capacity, and time.</li> <li>• Identify the size of the most commonly used units of measure (e.g., inch, foot, yard, centimeter, meter, cup, quart, gallon, milliliter, liter, ounce, pound, gram, and kilogram) to make reasonable estimates. Select the unit that is most appropriate in a given situation.</li> <li>• Develop strategies for determining the area and perimeter of a rectangle. Use models or sketches to demonstrate the fact that perimeter means the distance around something, while the area refers to the size of its surface.</li> <li>• Tell time on digital and analog clocks to the minute and determine elapsed time in minutes and hours.</li> <li>• Record time in digital form.</li> <li>• Use thermometer to determine the temperature in both degrees Celsius and degrees Fahrenheit.</li> <li>• Apply the following equivalencies:               <ul style="list-style-type: none"> <li>◦ 12 inches in 1 foot</li> <li>◦ 3 feet in 1 yard</li> <li>◦ 100 centimeters in 1 meter</li> <li>◦ 4 cups in 1 quart</li> <li>◦ 4 quarts in 1 gallon</li> <li>◦ 60 minutes in 1 hour</li> <li>◦ 24 hours in 1 day</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Accurately measure length, perimeter, volume, and weight to the nearest metric unit and to the nearest U.S. customary quarter-unit (e.g., <math>\frac{1}{4}</math> of an inch).</li> <li>• Carry out simple unit conversions, within (but not between) metric and U.S. customary systems of measurement.</li> <li>• Make realistic estimates and measurements using most common units of measure (inch, foot, yard; cup, quart, gallon; ounce, pound; millimeter, centimeter, meter; milliliter, liter; gram, kilogram) and select the unit most appropriate for a given situation.</li> <li>• Relate the area of a rectangle and its dimensions to area models for multiplication and division.</li> <li>• Develop strategies for finding the perimeter and area of rectangles and related triangles and parallelograms.</li> <li>• Estimate temperatures and read thermometers in degrees Fahrenheit and Celsius.</li> <li>• Determine elapsed time requiring unit conversions (e.g., weeks to months, minutes to hours).</li> </ul>	<ul style="list-style-type: none"> <li>• Select and accurately use appropriate units and tools for measuring length, perimeter, weight, and capacity in both metric and U.S. customary systems.</li> <li>• Determine measurements of length and perimeter to the nearest tenth centimeter and nearest tenth meter.</li> <li>• Develop and use formulas for determining the perimeter and area of rectangles and related triangles, parallelograms, polygons, and everyday objects.</li> <li>• Analyze the effects on area and perimeter of combining two simple geometric figures.</li> <li>• Know common referents for Fahrenheit and Celsius temperatures. (32° F and 0° C are the freezing point of water)</li> <li>• Estimate and measure the surface area and volume of a rectangular solid using square and cubic units.</li> <li>• Select appropriate tools to accurately measure, identify, and construct perpendicular and parallel lines, rectangles, and triangles.</li> <li>• Use a protractor to measure angles up to 180 degrees and recognize obtuse, acute, and right angles.</li> <li>• Use time fractions (e.g., <math>\frac{1}{4}</math> hour) as operants, and then convert back to whole numbers (e.g., 15 minutes).</li> </ul>
<b>Experiences</b>		
<ul style="list-style-type: none"> <li>• Select and use benchmarks to estimate measurements (e.g., a “square corner” can be used to judge the size of other angles; a paperclip weighs about a gram).</li> <li>• Make estimates of length, weight, and capacity and then use the actual measurement to determine the reasonableness of the estimate. Develop precision in measuring objects and solving problems.</li> <li>• Estimate or determine the surface area and volume of solid figures by covering them with squares or by counting the number of cubes that would fill them.</li> </ul>	<ul style="list-style-type: none"> <li>• Estimate and measure the surface area of a rectangular solid using unit squares.</li> <li>• Develop strategies for estimating the perimeters, areas, and volumes of irregular shapes and rectangular solids.</li> <li>• Use time fractions (e.g., <math>\frac{1}{4}</math> hour) as operants, and then convert back to whole numbers (e.g., 15 minutes).</li> </ul>	<ul style="list-style-type: none"> <li>• Estimate conversions between customary and metric units. (e.g., one inch is about 2.5 centimeters)</li> <li>• Develop strategies for determining approximate volumes of irregular solids.</li> </ul>

<b>Geometry</b>		
<b>Third Grade</b>	<b>Fourth Grade</b>	<b>Fifth Grade</b>
<b>Competencies</b>		
<ul style="list-style-type: none"> <li>• Recognize, describe, compare, and draw a variety of 2- and 3-dimensional shapes (e.g., pentagon, octagon, square, rectangle, cube).</li> <li>• Recognize 3-dimensional shapes (e.g., cubes, rectangular prisms, triangular prisms, spheres, pyramids, cones, and cylinders) in the environment.</li> <li>• Identify, describe, and classify a variety of 2- and 3-dimensional shapes (e.g., quadrilaterals, octagons, cubes, cylinders, spheres) using such terms as sides, angles, faces, edges, and vertices.</li> <li>• Combine and divide shapes in more than one way to create other shapes.</li> <li>• Create shapes with lines of symmetry using concrete models. Identify shapes that have line symmetry.</li> <li>• Develop an understanding of a variety of formal geometric terms, including face, edge, point, vertex, parallel, angles (right, acute, obtuse) and congruence.</li> <li>• Identify right angles in geometric figures or in appropriate objects, and determine whether other angles are greater than or less than a right angle.</li> <li>• Explore congruent figures. Recognize congruent and similar shapes.</li> </ul>	<ul style="list-style-type: none"> <li>• Identify, describe, and compare 2-D and 3-D geometrical shapes. Recognize congruent and similar shapes.</li> <li>• Identify, describe, compare, and classify triangles and quadrilaterals by attributes of their sides and angles. (e.g., An equilateral triangle has sides of equal length and angles of equal measure. A square is a rectangle with congruent sides.)</li> <li>• Identify line and rotational symmetry in 2-D shapes and designs. Build or draw shapes with line and/or rotational symmetry.</li> <li>• Model, sketch, draw, and label points, lines, line segments, angles, rays, various polygons, and parallel, perpendicular, and intersecting lines.</li> <li>• Identify right, acute, and obtuse angles in isolation and in geometric figures.</li> <li>• Understand angles as degrees of turn and make reasonable estimates of angle measures relative to 0, 90, and 180 degrees.</li> <li>• Predict and describe the results of performing reflections (flips), rotations (turns) and translations (slides) of polygons.</li> <li>• Locate and identify coordinates of points on grids, maps, globes, and other charts.</li> </ul>	<ul style="list-style-type: none"> <li>• Use properties of triangles and quadrilaterals to determine the lengths of their sides and perimeters, and to identify, describe, compare, and classify different types of triangles and quadrilaterals.</li> <li>• Develop, understand, and apply the following properties: the sum of the angle measures in a triangle is 180 degrees and the sum of the angle measures in a quadrilateral is 360 degrees.</li> <li>• Draw conclusions about the measures of corresponding sides and angles in two congruent or similar triangles or quadrilaterals.</li> <li>• Identify and build 3-dimensional objects from 2-dimensional representations.</li> <li>• Use measurement tools to accurately construct and label triangles, angles, and line segments.</li> <li>• Identify and describe line and rotational symmetry in 2- and 3-D shapes and designs.</li> <li>• Identify and describe a motion or series of motions that will show that two polygons are congruent.</li> <li>• Specify locations and describe spatial relationships and paths using coordinate geometry; find the distance between points along the horizontal and vertical lines of a coordinate system.</li> <li>• Identify the radius, diameter, and circumference of a circle.</li> </ul>
<b>Experiences</b>		
<ul style="list-style-type: none"> <li>• Describe paths for moving from one location to another on a grid.</li> <li>• Explore the effects on 2-D shapes of transformations (reflections, rotations, and translations)</li> <li>• Explore rotational symmetry.</li> </ul>	<ul style="list-style-type: none"> <li>• Explore circles in terms of radius, diameter, and circumference.</li> <li>• Build 3-D objects and sketch their 2-D representations.</li> <li>• Explore the concept of congruence to draw conclusions about the measures of corresponding sides and angles of 2 quadrilaterals.</li> </ul>	