

	4th	5th	6th
Number Sense/Number Theory	<ul style="list-style-type: none"> <li>• Count, read, and write whole numbers and number words to one million</li> <li>• Compare and order whole numbers to 1,000,000.</li> <li>• Identify and order place values through one million.</li> <li>• Use expanded notation to represent numbers (e.g. <math>3,045 = 3,000 + 40 + 5</math>)</li> <li>• Use number properties with any of the four basic operations (commutative, associative, properties of zero and one)</li> <li>• Round whole numbers to a given place value</li> <li>• Identify numbers as even or odd</li> <li>• Count forward and backward on a hundreds chart from any number by any multiple. (e.g. start at 4 and count by 4's to 36)</li> </ul>	<ul style="list-style-type: none"> <li>• Demonstrate the meaning of square numbers using concrete materials, pictures or grids</li> <li>• Count, read and write small positive numbers, including common fractions and decimals through thousandths, and large positive numbers through millions</li> <li>• Order and compare small positive numbers, including common fractions and decimals through thousandths, and large positive numbers through millions</li> <li>• Identify and find factors, multiples, and even/odd numbers</li> <li>• Use equivalent representations for the same whole numbers (e.g. <math>325 = 300 + 20 + 5 = 2 \text{ hundreds} + 12 \text{ tens} + 5 \text{ ones} = 13 \times 25</math>)</li> <li>• Identify prime/composite, odd/even numbers</li> <li>• Identify such properties as commutative, associative and distributive and use them to compute with whole numbers</li> <li>• Identify place value and understand the value of a digit from billions to thousandths</li> </ul>	<ul style="list-style-type: none"> <li>• Demonstrate meanings of integers, rational numbers, percents, exponents, square roots, and pi using physical materials, pictures and/or technology</li> <li>• Identify and use the concepts of prime, composite, and square numbers, products, quotients, multiples and factors</li> <li>• Describe numbers by their characteristics (divisibility, even, odd, prime, composite, square)</li> <li>• Develop, test, and explain conjectures about properties of numbers: associative, commutative, identity, distributive, multiplicative property of zero on rational numbers, including whole numbers</li> </ul>

<p>Computation</p>	<ul style="list-style-type: none"> <li>• Calculate and solve problems involving addition, subtraction, multiplication, and division</li> <li>• Continue automatic recall of basic addition and subtraction facts</li> <li>• Find the sum or difference of two whole numbers between 0 and 1,000 with regrouping</li> <li>• Use the inverse relationship of addition and subtraction to compute and check results</li> <li>• Memorize to automaticity the multiplication and division facts through 10</li> <li>• Use the inverse relationship of multiplication and division of whole numbers to compute and check results</li> <li>• Multiply four-digit numbers by two-digit numbers</li> <li>• Divide whole numbers by a single-digit number</li> <li>• Understand that subtraction and division of whole numbers is not commutative</li> </ul>	<ul style="list-style-type: none"> <li>• Add, subtract, multiply, and divide whole numbers and decimals</li> <li>• Memorize to automaticity the multiplication and division facts through 12</li> <li>• Multiply four-digit numbers by two-digit numbers</li> <li>• Divide by one- and two-digit divisors</li> </ul>	<ul style="list-style-type: none"> <li>• Demonstrate proficiency with the four basic operations using whole numbers and decimals</li> <li>• Apply appropriate computation methods to solve real-world problems involving whole numbers, common fractions, and decimals</li> <li>• Find equivalent representations by decomposing and composing whole numbers, i.e. <math>48 \times 12 = (48 \times 10) + (48 \times 2)</math> OR <math>48(10+2)</math></li> <li>• Develop, apply, and explain a variety of estimation strategies in problem solving situations and explain why an estimate may be acceptable in place of an exact answer</li> <li>• Use and explain strategies to add/subtract decimals and fractions in problem solving situations (common fractions with like and unlike denominators, mixed numbers, and decimals to the thousandths)</li> <li>• Demonstrate conceptual meaning of addition and subtraction of fractions and decimals in problem solving situations</li> </ul>
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<p>Decimals, Fractions, Percents. Ratios, Proportions</p>	<ul style="list-style-type: none"> <li>• Understand the relationship between whole numbers, fractions, and decimals</li> <li>• Use concrete materials and drawings to compare, order, and show equivalency between fractions</li> <li>• Use concrete materials to add and subtract proper fractions and mixed numbers with common denominators</li> <li>• Know and understand that fractions and decimals are two different representations of the same concept</li> <li>• Use pictures to represent the decimal fractions of tenths and hundredths</li> <li>• Locate and label common fractions and decimals between whole numbers on a number line</li> <li>• Using concrete materials and pictures, equate common fractions with their decimal equivalents</li> <li>• Identify and make different combinations of currency and coins up to \$10.00</li> <li>• Count change from the cost of the item (up to \$10.00) to the amount of money paid</li> <li>• Determine the total cost when given a unit cost and number of units</li> <li>• Add and subtract decimals using money notation</li> </ul>	<ul style="list-style-type: none"> <li>• Add and subtract fractions with like and unlike denominators</li> <li>• Add and subtract decimals including money</li> <li>• Multiply and divide money amounts by whole numbers</li> <li>• Recognize and create visual representations of fractions, decimals, and percentages</li> <li>• Convert fractions, decimals, and percents from one form to another</li> <li>• Locate and label positive numbers including decimals, fractions (proper and improper), mixed numbers, and percents on a number line</li> <li>• Compare and order fractions, decimals, and percents.</li> <li>• Recognize equivalent relationships between fractions, decimals, and %</li> </ul>	<ul style="list-style-type: none"> <li>• Locate, on a number line, commonly used positive rational numbers including terminating decimals through hundredths, fractions (halves, thirds, fourths, fifths, eighths, and tenths), mixed numbers, and percents</li> <li>• Use physical representations to demonstrate equivalent fractions and percents</li> <li>• Order and compare common fractions, decimals, and percents</li> <li>• Demonstrate equivalence among fractions, decimals, and percents in problem solving situations (e.g. 3 students out of 4 = 75%)</li> <li>• Use models to represent commonly used percentages in problem solving situations</li> <li>• Use models to explain how ratios, proportions, and percents can be used to solve real-world problems</li> </ul>
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<b>Patterns &amp; Relationships</b>	<ul style="list-style-type: none"> <li>• Reproduce, extend, create and describe patterns using pictures, geometric shapes or numbers</li> <li>• Complete tables or graphs to show patterns</li> <li>• Find missing elements in a pattern</li> </ul>	<ul style="list-style-type: none"> <li>• Solve problems by making and analyzing geometric and numeric patterns using words, tables, and graphs</li> <li>• Match a description of a scenario with its continuous graph</li> </ul>	<ul style="list-style-type: none"> <li>• Represent, describe, and analyze patterns involving tables, words, symbols, concrete objects, or pictures, and apply these patterns to solve problems</li> </ul>
<b>Variables</b>	<ul style="list-style-type: none"> <li>• Determine how the change in one quantity affects the change in another by addition, subtraction, or multiplication</li> </ul>	<ul style="list-style-type: none"> <li>• Use a variable to represent an unknown (letter, box, symbol)</li> <li>• Describe how a change in one quantity results in a change in another quantity (e.g. how the area of a rectangle changes when the length changes)</li> </ul>	<ul style="list-style-type: none"> <li>• Use a variable to represent an unknown (letter, box, symbol)</li> <li>• Predict and describe how a change in one quantity results in a change in another quantity in a linear relationship (e.g. A cat gains 3 oz/day, how much will it gain over 10 days?)</li> </ul>
<b>Functions and Equations</b>	<ul style="list-style-type: none"> <li>• Identify a rule using addition, subtraction, or multiplication and solve a problem using the rule (e.g. input/output boxes)</li> <li>• Select appropriate operational and relational symbols to make an expression true (e.g. <math>7 \_ 5 = 12</math>)</li> </ul>	<ul style="list-style-type: none"> <li>• Find missing elements of a pattern and identify mathematical rules (e.g. using input/output boxes, tables, charts and graphs)</li> <li>• Select appropriate operational and relational symbols to make an expression true (e.g. <math>7 \_ 5 = 35</math>)</li> </ul>	<ul style="list-style-type: none"> <li>• Explain whether data presented in a chart or graph is changing at a constant rate</li> <li>• Solve problems involving linear relationships with whole numbers, using tables, concrete objects, or pictures</li> </ul>

<p>Data, Probability and Statistics</p>	<ul style="list-style-type: none"> <li>• Collect, organize and display data using circle, bar and line graphs, line plots, tables, charts and pictographs</li> <li>• Read charts, tables and graphs, interpret the data, formulate questions, and draw conclusions</li> <li>• Find the median and mode of a set of data</li> <li>• Explain the degree of likelihood of events using words such as certain, impossible, possible, maybe, least likely, most likely, and unlikely</li> <li>• Predict the possible outcomes of flipping a coin, spinning a spinner, or rolling a number cube</li> <li>• Determine and support which outcomes are most likely, least likely or equally likely when using a chance device</li> <li>• Use strategies such as lists, tree diagrams or the counting principle to find all possible combinations of two sets of elements</li> </ul>	<ul style="list-style-type: none"> <li>• Collect, organize and display data using circle, bar and line graphs, line plots, tables, charts and pictographs</li> <li>• Analyze data in various graphs to draw conclusions</li> <li>• Find the range, median, mode and mean of a set of data</li> <li>• Explain the degree of likelihood of events using words such as certain, impossible, possible, maybe, least likely, most likely, and unlikely</li> <li>• Use chance devices, such as number cubes or spinners, to test probability</li> <li>• Use zero to represent the probability of an impossible event, one to represent the probability of a certain event, and common fractions and percents for events that are neither certain nor impossible</li> <li>• Make predictions based on simple probability experiments</li> <li>• Use strategies such as lists, tree diagrams or the counting principle to find all possible combinations of two sets of elements</li> </ul>	<ul style="list-style-type: none"> <li>• Collect, organize and display data using circle, bar and line graphs, line plots, tables, charts and pictographs</li> <li>• Read, interpret and analyze graphs (line, bar, circle, frequency table, etc.), draw conclusions and predict outcomes</li> <li>• Find and use measures of central tendency: (mean, median, mode) and measures of variability (range and quartiles)</li> <li>• Using a chance device, such as a number cube or spinner, design a fair game and an unfair game, and explain why they are fair and unfair respectively</li> <li>• Use zero to represent the probability of an impossible event, one to represent the probability of a certain event, and common fractions and percents for events that are neither certain nor impossible</li> <li>• Make predictions based on data obtained from probability experiments</li> <li>• Determine the number of possible outcomes and likelihood of events using a variety of methods such as: organized lists, tree diagrams, and experiments</li> </ul>
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<p>Geometry</p>	<ul style="list-style-type: none"> <li>• Identify and give examples of similar and congruent shapes that have been changed by flips, slides or turns</li> <li>• Identify polygons and three-dimensional shapes</li> <li>• Identify the lines of symmetry in polygons or other common shapes</li> <li>• Identify parallel, perpendicular, and intersecting lines and line segments</li> <li>• Identify attributes of 2 dimensional shapes such as number of sides, vertices, angles, and parallel sides</li> <li>• Describe squares as rectangles and recognize their common attributes</li> <li>• Show lines of symmetry on a two-dimensional figure</li> <li>• Classify angles as obtuse, acute or right and know that a right angle measures 90 degrees</li> <li>• Locate objects on a coordinate grid (1st quadrant only) and label ordered pairs</li> </ul>	<ul style="list-style-type: none"> <li>• Identify and represent a three-dimensional shape in two dimensions (nets)</li> <li>• Identify and draw two- and three-dimensional shapes</li> <li>• Predict and describe the results of flipping, sliding, or turning a two-dimensional shape</li> <li>• Compare and analyze the attributes of two- and three-dimensional shapes; e.g. congruency, vertices, edges, faces, sides, and angles (right, obtuse, acute)</li> <li>• Create and identify symmetry in multi-sided figures</li> <li>• Identify parallel, perpendicular, and intersecting lines and line segments</li> <li>• Estimate and measure the size of angles</li> <li>• Identify type of triangle by degree of angle (acute, obtuse, right) or length of side (scalene, isosocles, equilateral)</li> <li>• Use two angles of a triangle to determine the degree of the third angle</li> <li>• Read coordinate pairs in quadrant one of a coordinate grid</li> <li>• Choose the coordinate graph that represents a given data set</li> <li>• Use maps and grids to locate points, create paths, and measure distances within a coordinate system</li> </ul>	<ul style="list-style-type: none"> <li>• Compare and analyze the attributes of two- and three-dimensional shapes and use vocabulary to describe them (acute, obtuse, right angle, parallel lines, perpendicular lines, intersecting lines, ray, points, and line segments)</li> <li>• Make and test conjectures about geometric relationships and develop logical arguments to justify conclusions</li> <li>• Using objects or pictures, solve problems involving the perimeter and area of polygons: squares, rectangles, parallelograms, rhombuses, and triangles</li> <li>• Identify congruent shapes and their attributes using reflections, rotations, and translations (sliding)</li> <li>• Plot points on a coordinate graph in quadrant 1</li> <li>• Draw a graph in quadrant 1 from a given scenario or table</li> </ul>
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<p>Measurement</p>	<ul style="list-style-type: none"> <li>• Tell time to the nearest minute, including A.M. and P.M., using analog and digital clocks</li> <li>• Calculate elapsed time</li> <li>• Choose the appropriate units and tools for measuring length, area, volume, capacity, temperature and time, in both metric and US customary units</li> <li>• Estimate and measure length to the nearest 1/4 inch and centimeter</li> <li>• Estimate and measure the perimeter of polygons</li> <li>• Measure the length of sides of squares and rectangles to determine the area</li> <li>• Estimate and measure the capacity of containers</li> <li>• Estimate and weigh objects on a balance in metric and standard units</li> <li>• Estimate and measure the length of objects in metric and US customary units</li> <li>• Carry out simple unit conversions within a measurement system (e.g., centimeters to meters, hours to minutes)</li> <li>• Compare and order objects according to measurable attributes of length, area, volume, capacity, weight, temperature and time in metric and standard units</li> </ul>	<ul style="list-style-type: none"> <li>• Choose the appropriate units and tools for measuring length, area, volume, capacity, temperature and time, in both metric and US customary units</li> <li>• Estimate and measure length to the nearest 1/8 inch or centimeter</li> <li>• Estimate and measure the area and perimeter of polygons</li> <li>• Interpret and select appropriate scales on number lines, graphs, and maps</li> <li>• Demonstrate how changing one of the dimensions of a rectangle affects its perimeter and area</li> <li>• Estimate and measure the radius, diameter, and circumference of a circle</li> </ul>	<ul style="list-style-type: none"> <li>• Determine the appropriate unit of measure (metric and US customary) when estimating distance (length), capacity, and weight</li> <li>• Use US customary and metric units for length, weight, and temperature</li> <li>• Calculate the area of a polygon</li> <li>• Estimate, make and use direct and indirect measurements to describe and make comparisons</li> <li>• Read and interpret scales on number lines, graphs, and maps</li> <li>• Select an appropriate scale for a given problem</li> <li>• Using pictures or objects, derive the formula for perimeter</li> <li>• Solve problems involving area and perimeter of polygons</li> <li>• Develop and use formulas and/or procedures to solve problems involving the area of squares, rectangles, parallelograms, rhombuses, and triangles</li> <li>• Demonstrate how changing one of the dimensions of a rectangle or triangle affects its perimeter and area using concrete materials or graph paper</li> </ul>
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<p>Reasoning and Problem Solving</p>	<ul style="list-style-type: none"> <li>• Analyze problems by identifying relationships, distinguishing relevant from irrelevant information, sequencing and prioritizing information, and observing patterns</li> <li>• Determine when and how to break a problem into simpler parts</li> <li>• Draw a picture or diagram to solve a problem</li> <li>• Use estimation to verify the reasonableness of calculated results</li> <li>• Apply strategies and results from simpler problems to more complex problems</li> <li>• Express solutions clearly and logically using the appropriate mathematical terms and notation</li> <li>• Explain, in clear, written language, how the problem was solved</li> <li>• Indicate the relative advantages of exact and approximate solutions to problems and give answers to a specified degree of accuracy</li> <li>• Make precise calculations and check the validity of the results from the context of the problem</li> </ul>	<ul style="list-style-type: none"> <li>• Analyze problems by identifying relationships, distinguishing relevant from irrelevant information, sequencing and prioritizing information, and observing patterns</li> <li>• Determine when and how to break a problem into simpler parts</li> <li>• Draw a picture or diagram to solve a problem</li> <li>• Use estimation to verify the reasonableness of calculated results</li> <li>• Apply strategies and results from simpler problems to more complex problems</li> <li>• Express solutions clearly and logically using the appropriate mathematical terms and notation</li> <li>• Explain, in clear, written language, how the problem was solved</li> <li>• Indicate the relative advantages of exact and approximate solutions to problems and give answers to a specified degree of accuracy</li> <li>• Make precise calculations and check the validity of the results from the context of the problem</li> </ul>	<ul style="list-style-type: none"> <li>• Analyze problems by identifying relationships, distinguishing relevant from irrelevant information, sequencing and prioritizing information, and observing patterns</li> <li>• Determine when and how to break a problem into simpler parts</li> <li>• Draw a picture or diagram to solve a problem</li> <li>• Use estimation to verify the reasonableness of calculated results</li> <li>• Apply strategies and results from simpler problems to more complex problems</li> <li>• Express solutions clearly and logically using the appropriate mathematical terms and notation</li> <li>• Explain, in clear, written language, how the problem was solved</li> <li>• Indicate the relative advantages of exact and approximate solutions to problems and give answers to a specified degree of accuracy</li> <li>• Make precise calculations and check the validity of the results from the context of the problem</li> </ul>
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