

Amherst and Pelham Public Schools - Curriculum Map

Subject: Mathematics

Grade Level: Third Grade

Revised 7/08

Content Strand: Number Sense and Operations					
Unit Title	Time Frame	Unit Enduring Understanding	Unit Essential Questions	Unit Standards	Framework Standards
Investigations units: <i>Trading Stickers, Combining Coins</i> <i>Finding Fair Shares</i> <i>Equal Groups</i> <i>Collections and Travel Stories</i> <i>How Many Hundreds? How Many Miles?</i> Ten Minute Math and Classroom Routines: <i>Counting Around the Class More or Less? Practicing</i>	23 weeks (throughout the year)	Flexible methods of computation involve grouping numbers in a variety of ways.	What strategies can be used for finding sums and differences?	Student will: A. Understand numbers, ways of representing numbers, relationships among numbers, and number systems. Exhibit an understanding of the base ten number system by reading, modeling, writing, and interpreting whole numbers to at least 10,000; demonstrating an understanding of the values of the digits; and by comparing and ordering whole numbers through the ten thousands. Represent, order, and compare large numbers through the ten thousands using various representations, including expanded form, (e.g., $7,853 = 7000 + 800 + 50 + 3$), and in written form, (e.g., seven thousand eight hundred fifty-three). Demonstrate an understanding of common fractions (halves, thirds, fourths, fifths, sixths, eighths, tenths) as parts of unit wholes and as parts of a collection (groups). Select, use, and explain models, (e.g. diagrams and manipulatives), to show understanding of common fractions, mixed numbers, (e.g., $1\frac{1}{2}$); find equivalent fractions; and ordering and comparing fractions. Locate on a number line and compare the fractions: $\frac{1}{2}$, $\frac{1}{3}$, $\frac{1}{4}$, $\frac{2}{4}$, $\frac{2}{3}$, and $\frac{3}{4}$ and common mixed numbers.	3.N.1
		The base 10 number system is based on groups of ten.	What strategies can be used to read and compare large numbers?		3.N.2
		Place value patterns are repeated in large numbers.	How are place value patterns repeated in large numbers?		3.N.3a
		Fractions can be compared using a variety of models	How can fractions be modeled using numerals, regions, sets, and number lines?		3.N.3b
		Both common and decimal fractions can represent fractional parts.	How are numbers that represent fractional parts compared?		3.N.4

Unit Title		Unit/Enduring Understanding	Unit Essential Questions	Unit Standards Student will:	Framework Standards
<p><i>Place Value</i> <i>Today's Number</i> <i>What Time Is It?</i> <i>Class Collection</i> <i>What's the Temperature?</i></p> <p>Scott Foresman Addison Wesley text— Chapters 1, 2</p>	23 weeks (throughout the year)	<p>Multiplication and division are inverse operations.</p>	<p>How are common fractions and decimals alike and different?</p> <p>How are models used to show how fractional parts are combined or separated?</p> <p>What is the relationship among factors, products, and quotient?</p> <p>How can models for multiplication be used to divide?</p>	<p>Explore common decimals (tenths and hundredths) with equivalent fractions using concrete materials.</p> <p>Identify and distinguish among multiple uses of numbers, including cardinal (quantity), ordinal (position), labeling and measurement.</p> <p>Recognize classes (in particular, odds and evens and multiples of whole numbers through ten) to which a number may belong, and identify the numbers in those classes, (e.g., list 4 multiples of 7).</p> <p>B. Understand meanings of operations and how they relate to one another.</p> <p>Understand and use the inverse relationship between addition and subtraction (e.g., $8 + 6 = 14$ is the inverse of $14 - 6 = 8$ or $14 - 8 = 6$).</p> <p>Select, use, and explain various meanings and models of multiplication (through 10×10) and division of whole numbers. Understand and use the inverse relationship between the two operations.</p> <p>Select, use, and explain the commutative (order), associative (grouping), and identity properties of addition and multiplication of whole numbers in problem situations, (e.g. $5 + 3 = 3 + 5$; $6 \times 1 = 6$).</p> <p>Select and use appropriate operations (addition, subtraction, multiplication, and division) to solve problems, including those involving money using various manipulatives, pictures, diagrams, words and numbers.</p>	<p>3.N.5</p> <p>3.N.6</p> <p>3.N.7</p> <p>3.N.8a 3.N.8b</p>

		<p>Strategies for multiplication and division are based on place value concepts</p> <p>Proficiency with basic facts aids in estimation and computation with larger and smaller numbers.</p> <p>Currency amounts can be grouped and exchanged to solve problems.</p>	<p>What strategies can be used to learn basic multiplication and division facts?</p> <p>What strategies are used to estimate products and quotients?</p> <p>How can knowledge of place value help with multiplication and division of large numbers?</p> <p>How are parentheses used in numeric expressions?</p> <p>Why is it important to represent currency amounts in different ways?</p> <p>What are some strategies for calculating with money?</p>	<p>C. Compute fluently and make reasonable estimates</p> <p>Know addition and subtraction basic facts.</p> <p>Know multiplication facts through 10 x 10 and related division facts at the concrete, pictorial and abstract levels.</p> <p>Use basic facts to solve problems and compute related problems, (e.g., 3 x 5 is related to 3 x 50; 21 + 7 is related to 210 + 70).</p> <p>Add and subtract up to four-digit numbers accurately and efficiently.</p> <p>Multiply up to two digits by one digit accurately. Use strategies for multiplying multiples of 10.</p> <p>Divide a two-digit whole number by a single-digit whole number divisor (with or without remainders).</p> <p>Demonstrate in the classroom an understanding of and the ability to use conventional and alternative algorithms for addition and subtraction (up to four digits) and multiplication (two digits by one digit). [Note: An alternative algorithm can be a student invented procedure or an instructional method such as cluster problems that breaks down the algorithmic steps. The MCAS does not test for knowledge of conventional algorithms.]</p> <p>Demonstrate in the classroom an understanding of and the ability to use alternative and conventional algorithms for division. [The MCAS does not test for knowledge of conventional algorithms.]</p> <p>Round whole numbers through 1000 to the nearest 10 and nearest 100.</p> <p>Select and use a variety of estimation strategies (e.g., rounding, regrouping, etc.) to estimate quantities, measures, and the results of whole-number computations up to three-digit whole numbers and amounts of money to \$100; and to judge the reasonableness of the answer.</p> <p>Use concrete objects and visual models to add and subtract common fractions (halves, thirds, fourths, sixths, eighths) with</p>	<p>3.N.9</p> <p>3.N.10</p> <p>3.N.11a 3.N.11b 3.N.11c</p> <p>3.N.12a 3.N.12b 3.N.13 3.N.14 3.N.15 3.N.16 3.N.17 3.N.18</p>
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				like denominators.	
Content Strand: Patterns, Relations, and Algebra					
Unit Title	Time Frame	Unit Enduring Understanding	Unit Essential Questions	Unit Standards Student will:	Framework Standards
<p>Investigations units:</p> <p><i>Stories, Tables, and Graphs</i></p> <p><i>Trading Stickers, Combining Coins</i></p> <p><i>Collections and Travel Stories</i></p> <p><i>Equal Groups</i></p> <p><i>How Many Hundreds? How Many Miles?</i> (pp103-106)</p> <p>Ten Minute Math and Classroom Routines:</p> <p><i>Counting Around the Class</i></p> <p><i>Guess My Rule More or less?</i></p> <p><i>Practicing Place Value</i></p> <p><i>Today's Number</i></p> <p><i>What Time Is It?</i></p> <p><i>What's the Temperature?</i></p>	4 weeks (throughout the year)	<p>Number patterns and relationships can be represented using variables.</p> <p>Symbolic notation is used to represent mathematical relationships.</p>	<p>Why are variables used?</p> <p>How can a pattern be generalized?</p> <p>What strategies can be used to solve for unknowns in algebraic equations?</p> <p>How are symbols used to represent mathematical relationships including operations, equality, and inequality?</p>	<p>A. Understand patterns, relations, and functions.</p> <p>Create, describe, extend, and explain symbolic (geometric) patterns and addition and subtraction, (e.g., 2, 6, 10...; and 50, 45, 40...)</p> <p>B. Represent and analyze mathematical situations and structures using algebraic symbols.</p> <p>Determine which symbol (=, <, or >) is appropriate for a given number sentence, (e.g., $7 \times 8 \underline{\quad} 49 + 6$).</p> <p>Determine the value of a variables (through 100) in simple equations involving addition, subtraction, or multiplication, (e.g., $\square + 2 = 9$; $5 \times \nabla = 35$).</p> <p>C. Use mathematical models to represent and understand quantitative relationships.</p> <p>Use pictures, models, tables, charts, graphs, words, number sentences, and mathematical notations to represent and interpret mathematical relationships in everyday situations.</p> <p>Use Venn Diagrams to sort and classify numbers, geometric shapes, and physical attributes.</p> <p>D. Analyze change in various contexts.</p> <p>Determine and use function rules for input-output tables involving only one operation, e.g., complete this function table:</p>	<p>3.P.1</p> <p>3.P.2</p> <p>3.P.3</p> <p>3.P.4</p> <p>3.P.5</p> <p>3.P.6</p>

Scott Foresman Addison Wesley text—selected lessons in Chap. 1, 2, 3				<table border="1"> <thead> <tr> <th>Input</th> <th>Output</th> </tr> </thead> <tbody> <tr> <td>4</td> <td>20</td> </tr> <tr> <td>5</td> <td>?</td> </tr> <tr> <td>6</td> <td>30</td> </tr> <tr> <td>7</td> <td>?</td> </tr> <tr> <td>8</td> <td>40</td> </tr> <tr> <td>9</td> <td>?</td> </tr> </tbody> </table>	Input	Output	4	20	5	?	6	30	7	?	8	40	9	?	
Input	Output																		
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Content Strand: Geometry																			
Unit Title	Time Frame	Unit Enduring Understanding	Unit Essential Questions	Unit Standards Student will:	Framework Standards														
Investigations units: <i>Perimeter, Angles, and Area</i> <i>Solids and Boxes</i> <i>Stories, Tables, and Graphs (p.41, p.100)</i> <i>Finding Fair Shares</i> Ten Minute Math and Classroom Routines: <i>Guess My Rule More or less?</i> <i>Practicing Place Value Today's</i>	3 weeks	<p>A three dimensional figure can be analyzed in terms of its two-dimensional parts.</p> <p>Objects can be described and compared using geometric attributes.</p>	<p>How are one, two, or three-dimensional shapes described and classified?</p> <p>How can objects be represented and compared using geometric attributes?</p> <p>What makes one angle different from another?</p> <p>How are angles classified?</p> <p>How are points, lines,</p>	<p>A. Analyze characteristics and properties of two- and three-dimensional geometric shapes and develop mathematical arguments about geometric relationships.</p> <p>Compare and analyze attributes and other features ((e.g., number of sides, faces, edges, corners (vertices), diagonals, and symmetry)) of two and three-dimensional geometric shapes.</p> <p>Describe, model, draw, compare, and classify two-dimensional shapes, (e.g., circles, polygons: triangles, squares, rectangles, parallelograms, diamonds, pentagons, hexagons, octagons, and quadrilaterals). Identify and describe simple three-dimensional shapes, (e.g. cubes, spheres, square pyramids, cylinders, cones, rectangular and square prisms).</p> <p>Recognize congruent figures and solids.</p> <p>Identify angles as greater than, less than or equal to a right angle.</p> <p>Describe and draw horizontal, vertical, diagonal, intersecting, perpendicular, and parallel lines and curves. Identify lines, segments and points.</p>	<p>3.G.1</p> <p>3.G.2</p> <p>3.G.3</p> <p>3.G.4</p>														

<p><i>Number What Time Is It? What's the Temperature?</i></p> <p>Scott Foresman Addison Wesley text— Chapters 4, 8</p>		<p>Ordered pairs show an exact location on a coordinate plane.</p> <p>A transformation is a specific movement of an object.</p> <p>Changing the position of an object does not affect its attributes.</p>	<p>line segments, rays, and angles related?</p> <p>How is the location of a point on a grid described?</p> <p>In what ways can the position of geometric figures be changed?</p> <p>What strategies can be used to check for symmetry? for congruency?</p> <p>What are translations, rotations, and reflections?</p> <p>How are geometric properties used to solve problems in everyday life?</p>	<p>B. Specify locations and describe spatial relationships using coordinate geometry and other representational systems.</p> <p>Using ordered pairs of whole numbers and/or letters to graph, locate, and identify points on a grid (first quadrant).</p> <p>C. Apply transformations and use symmetry to analyze mathematical situations.</p> <p>Describe and apply transformations such as flips (reflections), turns (rotations), and slides (translations) for determining if two shapes are congruent.</p> <p>Identify lines of symmetry in two-dimensional shapes.</p> <p>D. Use visualization, spatial reasoning, and geometric modeling to solve problems.</p> <p>Predict and validate the results of taking apart, folding, and combining two-dimensional shapes.</p> <p>Relate geometric ideas to numbers, (e.g., seeing rows in an array as a model of multiplication).</p>	<p>3.G.5</p> <p>3.G.6</p> <p>3.G.7</p> <p>3.G.8</p> <p>3.G.9.</p> <p>3.G.10</p>
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Content Strand: Measurement					
Unit Title	Time Frame	Unit Enduring Understanding	Unit Essential Questions	Unit Standards	Framework Standards
Investigations materials: <i>Surveys and Line Plots</i> <i>Perimeter, Angles, and Area</i> <i>Trading Stickers, Combining Coins (pp.117-119)</i>	3 weeks	Standard units provide common language for communicating measurements. Units within a system are built upon each	When is an estimate more appropriate than an actual measurement? How are the units of measure within a standard	Student will: A. Understand measurable attributes of objects and the units, systems, and processes of measurement. Demonstrate an understanding of such attributes as length, area, weight, and capacity/volume, and select the appropriate type of unit for measuring each attribute using both the U.S. Customary (English) and metric systems, including centimeters, meters, inches, feet, yards, miles, pints, quarts, gallons, liters, and pounds. Carry out simple unit conversions within a system of	3.M.1 3.M.2

<p><i>Collections and Travel Stories</i></p> <p><i>Equal Groups Stories, Tables, and Graphs (Classroom Routines)</i></p> <p>Ten Minute Math and Classroom Routines: <i>Guess My Rule</i> <i>Counting Around the Class</i> <i>More or less?</i> <i>Practicing Place Value</i> <i>Today's Number</i> <i>What's the Temperature?</i></p> <p>Scott Foresman Addison Wesley text—Selected lessons in Chapters 4, 9, 10, 12</p>		<p>other.</p> <p>Perimeter is a one-dimensional measure (Perimeter surrounds); Area is a two-dimensional measure (Area covers).</p> <p>The perimeters, areas, and volumes of rectangular objects depend on their dimensions.</p> <p>The choice of measurement tools depends on the measurable attribute and the degree of precision desired.</p>	<p>system related?</p> <p>What strategies can be used to find area and perimeter of a shape or a region?</p> <p>How could two different shapes have the same area or the same perimeter?</p> <p>How are perimeter, area, and volume related?</p> <p>What tools and units are used to measure the attributes of an object?</p>	<p>measurement, (e.g., hours to minutes, cents to dollars, yards to feet or inches, centimeters to meters, etc.).</p> <p>B. Apply appropriate techniques, tools, and formulas to determine measurements.</p> <p>Identify time to the minute on analog and digital clocks using a.m. and p.m. Compute elapsed time less than one hour using a clock (e.g., minutes since...) and using a calendar (e.g., days since...).</p> <p>Estimate and find area and perimeter of a rectangle, using concrete objects, diagrams, and grids.</p> <p>Identify and use appropriate metric and U.S. Customary (English) units and tools (e.g., ruler, tape measure, meter stick, balance scale, thermometer, clock) to estimate, measure, and solve problems involving length, area, capacity/volume, weight, time, and temperature.</p>	<p>3.M.3 3.M.4 3.M.5</p>
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Content Strand: Data Analysis, Statistics, and Probability						
Unit Title	Time Frame	Unit Enduring Understanding	Unit Essential Questions	Student will:	Unit Standards	Framework Standards

<p>Investigations units:</p> <p><i>Surveys and Line Plots</i></p> <p>Ten Minute Math and Classroom Routines:</p> <p><i>Guess My Rule</i> <i>More or less?</i> <i>Today's Number</i> <i>What's the Temperature?</i></p> <p>Scott Foresman Addison Wesley text— Selected lessons in Chapters 4, 5</p>	<p>3 weeks</p>	<p>Organization of information shows relationships</p> <p>The type of data determines how data sets can be organized, displayed, and analyzed.</p> <p>The likelihood of an event depends on the possible outcomes.</p> <p>Probability can be represented numerically and graphically.</p>	<p>What are some ways to organize data?</p> <p>How can the elements of a graph help people to understand and to interpret the data?</p> <p>How does the type of data influence the choice of graph?</p> <p>What kinds of questions can be answered using different data displays?</p> <p>How can the possible outcomes for an event be determined?</p> <p>How is probability represented numerically?</p> <p>How is the likelihood of an event determined and communicated?</p>	<p>A. Formulate questions that can be addressed with data and collect, organize, and display relevant data to answer them.</p> <p>Collect and organize data using observations, measurements, surveys, or experiments, and identify appropriate ways to display the data.</p> <p>B. Select and use appropriate statistical methods to analyze data.</p> <p>Match representations of a data set in the form of lists, tables, line plots, pictographs, tallies or bar graphs with the actual set of data.</p> <p>C. Develop and evaluate inferences and predictions that are based on data.</p> <p>Construct, draw conclusions, and make predictions from various representations of data sets, including tables, bar graphs, pictographs, line plots, tallies, and Venn Diagrams.</p> <p>D. Understand and apply basic concepts of probability.</p> <p>Represent the possible outcomes for a simple probability situation, (e.g., the probability of drawing a red marble from a bag containing 3 red marbles and 4 green marbles; outcomes of spinners, 2 colored counters; or number cubes, etc.).</p> <p>List and count the number of possible combinations of objects from two sets, (e.g., how many different outfits can one make from a set of three shirts and a set of two skirts?).</p> <p>Classify outcomes as fair, unfair, certain, likely, unlikely, or impossible by conducting experiments using concrete objects such as two-colored counters, number cubes, spinners, or coins.</p>	<p>3.D.1</p> <p>3.D.2</p> <p>3.D.3</p> <p>3.D.4</p> <p>3.D.5</p> <p>3.D.6</p>
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