

Amherst and Pelham Public Schools - Curriculum Map

Subject: Mathematics

Grade Level: Second Grade

(revised 7/2008)

Content Strand: Number Sense and Operations					
Unit Title	Time Frame	Unit Enduring Understanding	Unit Essential Questions	Unit Standards Student will:	Framework Standards
<p>Number Sense and Operations</p> <p>Investigations units:</p> <p><i>Counting Coins and Combinations</i></p> <p><i>Stickers, Number Strings, and Story Problems</i></p> <p><i>Parts of a Whole, Parts of a Group</i></p> <p><i>How Many Floors? How Many Rooms?</i></p> <p><i>Partners, Teams, and Paper Clips</i></p>	<p>22 weeks (throughout the year)</p>	<p>The base 10 number system is based on groups of ten.</p> <p>The position of a digit in a number determines its value.</p> <p>Fractions represent parts of a whole.</p> <p>Fractions can be compared using a variety of models.</p> <p>Symbolic notation is used to represent mathematical relationships.</p> <p>Currency amounts can be grouped and exchanged to solve problems.</p>	<p>What strategies can be used to read and compare large numbers?</p> <p>How are the numerator and denominator related?</p> <p>How can the fractional parts of a set be modeled?</p> <p>How can fractions be modeled using numerals, regions, sets, and number lines?</p> <p>How are symbols used to represent mathematical relationships including operations, equality, and inequality?</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>A. Understand numbers, ways of representing numbers, relationships among numbers, and number systems.</p> <p>Name and write (in numerals) whole numbers to 1000, identify the place values of the digits, and order the numbers.</p> <p>Identify and distinguish among multiple uses of numbers, including cardinal (to tell how many) and ordinal (to tell which one in an ordered list), and numbers as labels and as measurements.</p> <p>Identify and represent common fractions (1/2, 1/3, 1/4) as parts of wholes, parts of groups, and numbers on the number line.</p> <p>Compare whole numbers using terms and symbols, (e.g., less than, equal to, greater than, <, =, >).</p> <p>Identify odd and even numbers and determine whether a set of objects has an odd or even number of elements.</p> <p>Identify the value of all U.S. coins, and \$1, \$5, \$10, and \$20 bills. Find the value of a collection of coins and dollar bills and different ways to represent an amount of money up to \$5. Use appropriate notation, (e.g., 69¢, \$1.35).</p> <p>B. Understand meanings of operations and how they relate to one another.</p>	<p>2.N.1</p> <p>2.N.2</p> <p>2.N.3</p> <p>2.N.4</p> <p>2.N.5</p> <p>2.N.6</p>

<p><i>How Many Tens? How Many Ones?</i></p> <p>Classroom Routines:</p> <p><i>How many Pockets? Today's Number Quick Images What Time is It?</i></p> <p>Scott Foresman Addison Wesley text, Chapters 3, 10, & 11</p>		<p>The groupings of 1s, 10s, and 100s for a given number can be taken apart in different ways.</p>	<p>How does the position of a digit in a number affect its value?</p> <p>In what different ways can numbers be grouped?</p>	<p>Demonstrate an understanding of various meanings of addition and subtraction, [e.g., addition as combination (plus, combined with, more); subtraction as comparison (how much less, how much more); equalizing (how many more are needed to make these equal); and separation (how much is remaining)].</p>	2.N.7
		<p>Computation involves taking apart and combining numbers using a variety of strategies.</p>	<p>What happens to a quantity when a number is composed in a different way?</p> <p>What are efficient strategies for adding or subtracting two given numbers?</p>	<p>Understand and use the inverse relationship between addition and subtraction (e.g., $8 + 6 = 14$ is equivalent to $14 - 6 = 8$ and is also equivalent to $14 - 8 = 6$) to solve problems and check solutions.</p>	2.N.8
		<p>Sums and differences of numbers less than 19 provide a foundation for number concepts.</p>	<p>What are the strategies for mastering the basic facts?</p>	<p>C. Compute fluently and make reasonable estimates.</p> <p>Know addition facts (addends to ten) and related subtraction facts, and use them to solve problems.</p>	2.N.9
		<p>Mathematical expressions and equations represent relationships among quantities.</p>	<p>What strategies can be used for finding sums and differences?</p>	<p>Demonstrate the ability to add and subtract three-digit numbers accurately and efficiently with and without regrouping.</p>	2.N.10
		<p>Flexible methods of computation involve grouping numbers in a variety of ways. Estimation is a strategy for getting as close as possible to an exact answer</p>	<p>What are strategies to make a reasonable estimation?</p>	<p>Demonstrate an understanding of and the ability to use alternative and conventional algorithms for addition (two 3-digit numbers and three 2-digit numbers) and subtraction (two 3-digit numbers).</p>	2.N.11
				<p>Estimate, calculate, and solve problems involving addition and subtraction of two-digit numbers. Describe differences between estimates and actual calculations.</p>	2.N.12
				<p>Use concrete materials to investigate situations that lead to multiplication and division. Understand basic concepts and situations that involve multiplication and division, such as equal groupings of objects and sharing equally.</p>	2.N.13
				<p>Explore and investigate addition of common fractions, (e.g., $\frac{1}{2} + \frac{1}{2} = 1$, $\frac{1}{4} + \frac{1}{4} = \frac{1}{2}$).</p>	2.N.14

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>How Many Floors? How Many Rooms?</i></p> <p><i>Counting Coins, and Combinations</i></p> <p><i>Stickers, Number Strings, and Story Problems</i></p> <p><i>How Many Tens? How Many Ones?</i></p> <p>Classroom Routines:</p> <p><i>How Many Pockets? Today's Number Quick Images What Time is It?</i></p>	3 weeks	<p>Patterns can grow and repeat.</p> <p>Mathematical expressions and equations represent relationships among quantities.</p>	<p>What strategies can be used to continue a numerical sequence?</p> <p>How are increasing and repeating patterns different?</p> <p>How does a mathematical expression differ from a number sentence?</p> <p>How is a number sentence like a balance scale</p>	<p>A. Understand patterns, relations, and functions.</p> <p>Identify, reproduce, describe, extend, and create simple rhythmic, shape, size, number, color, and letter repeating patterns.</p> <p>Identify different patterns on the hundreds chart.</p> <p>Describe addition and subtraction number patterns, (e.g., 1, 4, 7, 10 or 25, 23, 21...).</p> <p>Skip count by twos, fives, and tens up to at least 50, starting from any number.</p> <p>B. Represent and analyze mathematical situations and structures using algebraic symbols.</p> <p>Construct and solve open sentences that have variables, (e.g., $\Delta + 7 = 10$).</p> <p>C. Use mathematical models to represent and understand quantitative relationships.</p> <p>Write number sentences using +, -, <, =, and/or > to represent mathematical relationships in everyday situations.</p> <p>Describe functions related to trading, including coin trades and measurement trades, (e.g., five pennies make one nickel or four cups make one quart).</p> <p>D. Analyze change in various contexts.</p> <p>Explore situations with variables as unknowns and as quantities that vary.</p>	<p>2.P.1</p> <p>2.P.2</p> <p>2.P.3</p> <p>2.P.4</p> <p>2.P.5</p> <p>2.P.6</p> <p>2.P.7</p> <p>2.P.8</p>

Content Strand: Geometry

Unit Title	Time Frame	Unit Enduring Understanding	Unit Essential Questions	Unit Standards Student will:	Framework Standards
<p>Investigations units:</p> <p><i>Shapes, Blocks, and Symmetry</i></p> <p><i>Counting Coins, and Combinations (p.36-37)</i></p> <p>Classroom Routines:</p> <p><i>How many Pockets? Today's Number Quick Images What Time is It?</i></p>	<p>5 weeks</p>	<p>Geometric shapes can be classified by attributes.</p> <p>A three dimensional figure can be analyzed in terms of its two-dimensional parts.</p> <p>Changing the position of an object does not affect its attributes.</p> <p>Ordered pairs show an exact location on a coordinate plane.</p>	<p>What are the attributes of a shape?</p> <p>What are ways shapes can be sorted?</p> <p>How are plane shapes different from solids?</p> <p>What makes a shape symmetric?</p> <p>What makes shapes congruent?</p> <p>How are one, two, or three-dimensional shapes described and classified?</p> <p>What makes one angle different from another?</p> <p>How are geometric properties used to solve problems in daily life?</p> <p>What strategies can be used to check for symmetry or congruency?</p> <p>In what ways can the position of geometric figures be changed?</p>	<p>A. Analyze characteristics and properties of two- and three-dimensional geometric shapes and develop mathematical arguments about geometric relationships.</p> <p>Describe attributes and parts of two- and three-dimensional shapes, (e.g., length of sides, and number of corners, edges, faces, and sides).</p> <p>Identify, describe, draw, and compare two-dimensional shapes, including both polygonal (up to six sides) and curved figures such as circles.</p> <p>Recognize congruent shapes.</p> <p>B. Specify locations and describe spatial relationships using coordinate geometry and other representational systems. Identify relative spatial positions, (e.g., closer, farther, higher, lower, etc.).</p> <p>Find and name locations on maps and express simple relationships, (e.g., near to, far away from).</p> <p>Recognize geometric shapes and structures in the environment and specify their location.</p> <p>C. Apply transformations and use symmetry to analyze mathematical situations.</p> <p>Identify shapes that have been rotated (turned), reflected (flipped), translated (slid), and enlarged. Describe direction of translations, (e.g., left, right, up, down).</p> <p>Identify symmetry in two-dimensional shapes. Explore symmetry in two-dimensional shapes with mirrors or by paper folding.</p> <p>D. Use visualization, spatial reasoning, and geometric modeling to solve problems.</p>	<p>2.G.1</p> <p>2.G.2</p> <p>2.G.3</p> <p>2.G.4</p> <p>2.G.5</p> <p>2.G.6</p> <p>2.G.7</p> <p>2.G.8</p>

			How is the location of a point on a grid described?	<p>Predict the results of putting shapes together and taking them apart.</p> <p>Relate geometric ideas to numbers, (e.g., seeing rows in an array as a model of repeated addition or groupings in multiplication).</p> <p>Recognize and represent shapes from different spatial perspectives.</p>	<p>2.G.9</p> <p>2.G.10</p> <p>2.G.11</p>
--	--	--	---	---	--

Content Strand: Measurement

Unit Title	Time Frame	Unit Enduring Understanding	Unit Essential Questions	Unit Standards Student will:	Framework Standards
<p>Investigations units:</p> <p><i>Measuring Length and Time</i></p> <p><i>How Many Floors? How Many Rooms?</i></p> <p><i>Shapes, Blocks, and Symmetry</i></p> <p>Classroom Routines:</p> <p><i>How Many Pockets?</i></p> <p><i>Today's Number</i></p> <p><i>Quick Images</i></p> <p><i>What Time is It?</i></p> <p>Scott Foresman Addison Wesley text, Chapter 9</p>	3 weeks	<p>Specific tools measure specific attributes.</p> <p>A measurement must contain a number and a unit.</p> <p>Standard units provide common language for communicating measurements.</p> <p>The choice of measurement tools depends on the measurable attribute and the degree of precision desired.</p>	<p>What units and tools measure the different attributes?</p> <p>Why are standard units of measurement used?</p> <p>Why are units used in measuring?</p> <p>How are units of measurement related?</p> <p>What determines the choice of a measurement tool?</p> <p>What estimation strategies are used in measurement?</p> <p>When is an estimate more appropriate than an actual measurement?</p>	<p>A. Understand measurable attributes of objects and the units, systems, and processes of measurement.</p> <p>Identify parts of the day (e.g., morning, afternoon, evening), days of the week, and months of the year. Identify dates using a calendar.</p> <p>Tell time at quarter-hour and 5 minute intervals on analog and digital clocks using a.m. and p.m.</p> <p>Compare the length, weight, area (using concrete units), and volume of two or more objects by using direct comparison, non-standard, and standard units.</p> <p>Measure and compare common objects using metric and English units of length measurement, (e.g., centimeter, inch, feet, yards).</p> <p>B. Apply appropriate techniques, tools, and formulas to determine measurements.</p> <p>Select and correctly use the appropriate measurement tools and units of measure, (e.g., ruler, balance scale, thermometer, yardstick, tape measure, pints, quarts, liters, pounds, etc.) to determine a measurement.</p> <p>Make and use estimates of measurement, including time, volume, weight, and area.</p>	<p>2.M.1</p> <p>2.M.2</p> <p>2.M.3</p> <p>2.M.4</p> <p>2.M.5</p> <p>2.M.6</p>

Content Strand: Data Analysis, Statistics, and Probability					
Unit Title	Time Frame	Unit Enduring Understanding	Unit Essential Questions	Unit Standards Student will:	Framework Standards
Investigations units: <i>Pockets, Teeth, and Favorite Things</i> <i>How Many Floors? How Many Rooms? (p.65)</i> <i>How Many Tens? How Many Ones? (pp.56-58)</i> Classroom Routines: <i>How Many Pockets? Today's Number Quick Images What Time is It?</i> Scott Foresman Addison Wesley text, Selected lessons in Chapters 8, 9	3 weeks	<p>Organization of information shows relationships.</p> <p>Data displays organize information that can be easily analyzed.</p> <p>The likelihood of an event depends on the possible outcomes.</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 changing the scale affect how data is communicated?</p> <p>What are some ways data can be displayed to communicate information?</p> <p>How can the next step in a pattern be found?</p> <p>What questions can be answered from a graph?</p> <p>How can the possible outcomes for an event be determined?</p>	<p>A. Formulate questions that can be addressed with data and collect, organize, and display relevant data to answer them.</p> <p>Use interviews, surveys, and observations to gather data about themselves and their surroundings.</p> <p>B. Select and use appropriate statistical methods to analyze data.</p> <p>Organize, classify, represent, and interpret data using tallies, charts, tables, bar graphs, pictographs, and Venn diagrams; interpret the representations.</p> <p>C. Develop and evaluate inferences and predictions that are based on data.</p> <p>Formulate inferences (draw conclusions) and make educated guesses (conjectures) about a situation based on information gained from data.</p> <p>D. Understand and apply basic concepts of probability.</p> <p>Investigate which outcomes of experiments are more likely, likely, and impossible outcomes using spinners, counters, and other concrete objects. Predict results.</p> <p>Perform basic probability activities (e.g. coin toss), tally the results, and record.</p>	<p>2.D.1</p> <p>2.D.2</p> <p>2.D.3</p> <p>2.D.4</p> <p>2.D.5</p>