

Mathematics Resource Map  
K-5

**Mathematics Standards  
Guiding Principles**

**Problem Solving**

Problem solving is both a means of developing students' knowledge of mathematics and a critical outcome of a good mathematics education. As such, it is an essential component of the curriculum. A mathematical problem, as distinct from an exercise, requires the solver to search for a method for solving the problem rather than following a set procedure. Mathematical problem solving, therefore, requires an understanding of relevant concepts, procedures, and strategies. To become good problem solvers, students need many opportunities to formulate questions, model problem situations in a variety of ways, generalize mathematical relationships, and solve problems in both mathematical and everyday contexts.

**Communicating**

The ability to express mathematical ideas coherently to different audiences is an important skill in a technological society. Students develop this skill and deepen their understanding of mathematics when they use accurate mathematical language to talk and write about what they are doing. They clarify mathematical ideas as they discuss them with peers, and reflect on strategies and solutions. By talking and writing about mathematics, students learn how to make convincing arguments and to represent mathematical ideas verbally, pictorially, and symbolically.

**Reasoning and Proof**

From the early grades on, students develop their reasoning skills by making and testing mathematical conjectures, drawing logical conclusions, and justifying their thinking in developmentally appropriate ways. As they advance through the grades, students' arguments become more sophisticated and they are able to construct formal proofs. By doing so, students learn what mathematical reasoning entails.

**Making Connections**

Mathematics is not a collection of separate strands or standards. Rather, it is an integrated field of study. Students develop a perspective of the mathematics field as an integrated whole by understanding connections within and outside of the discipline. It is important for teachers to demonstrate the significance and relevance of the subject by encouraging students to explore the connections that exist within mathematics, within other disciplines, and between mathematics and students' own experiences.

**Representations**

Mathematics involves using various types of representations for mathematical objects and actions, including numbers, shapes, operations, and relations. These representations can be numerals or diagrams, algebraic expressions or graphs, or matrices that model a method for solving a system of equations. Students must learn to use a repertoire of mathematical representations. When they can do so, they have a set of tools that significantly expands their capacity to think mathematically.

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State Standard		Student Expectations	Software
K.N.1	Count by ones to at least 20	Count by ones orally beginning from any number in the sequence from 0-31	Edmark's Millie's Math House; Build-a-bug, Number Machine
K.N.2	Match quantities up to at least 10 with numerals and words	Create sets of objects to represent quantities from 0-10 Recognize and write numeric symbols for quantities from 0-10 Represent an empty set with the numeral "0".	Edmark's Millie's Math House; What's My Number?, Number Machine Virtual Manipulatives; <a href="#">Pattern Blocks</a>
K.N.3	Identify position of objects in sequences (e.g. first, second, up to fifth)	Use ordinal numbers 1 <sup>st</sup> , 2 <sup>nd</sup> , 3 <sup>rd</sup> , 4 <sup>th</sup> , and 5 <sup>th</sup> verbally to identify position. Order the numerals 0-20	TimeLiner
K.N.4	Compare sets of up to at least 10 concrete objects using appropriate language (e.g. none, more than, fewer than, some number of, one more than) and order numbers	Determine whether a group of objects being changed is getting "more" or "less", or staying the same". Represent two equal sets containing up to 10. Compare sets of a least 10 objects using appropriate language.	Edmark's Mighty Math Carnival Countdown; Carnival Cars, Giggly Factory
K.N.5	Understand the concepts of whole and half.	Identify if something cut in 2 pieces has been fairly cut in half. Tell or show how to cut something equally in half.	Virtual Manipulatives; <a href="#">Fractions Naming</a> , <a href="#">Fractions Parts of a Whole</a>
K.N.6	Identify U.S. coins by name	Identify US coins by name. Match coins to their correct value (i.e. a nickel=5 cents)	Edmark's Mighty Math Zoo Zillions; Gnu Ewe Boutique
K.N.7	Use objects and drawings to model and solve related addition and subtraction problems to ten	Interpret number sentences or addition and subtraction problems using numbers 0-10 with manipulatives (e.g. with number tiles, counters) Create and interpret simple stories that can be solved using addition and subtraction. Use objects and drawing to model and solve related addition and subtraction problems to ten.	Edmark's Mighty Math Carnival Countdown; Carnival Cars, Snap Clowns Edmark's Mighty Math Zoo Zillions; Fish Stories, Annie's Jungle Trail, Number Line Express Virtual Manipulatives; <a href="#">Base Blocks Addition</a> , <a href="#">Base Blocks Subtraction</a>
K.N.8	Estimate the number of objects in a group and verify results.	Use the strategy of "guess and check" to estimate with like objects for 0-10 and verify results.	<a href="#">MassLearns.com</a>

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	State Standard		Software/Websites
K.P.1	Identify the attributes of objects as a foundation for sorting and classifying (e.g., a red truck, a red block, and a red ball share the attributes of being red; a square block, a square cracker, and a square book share the attribute of being square shaped).	Identify objects by color, shape, and size that are the same or different. Identify the attributes of objects as a foundation for sorting and classifying (e.g., a red truck, a red block, and a red ball share the attributes of being red; a square block, a square cracker, and a square book share the attribute of being square shaped).	Edmark's Might Math Carnival Countdown; Carnival Cars, Pattern Block Roundup Virtual Manipulatives; <a href="#">Color Patterns</a> , <a href="#">Pattern Blocks</a> <a href="#">MassLearns.com</a>
K.P.2	Sort and classify objects by color, shape, size, number, and other properties.	Sort and classify objects, giving reasons why they are alike or different.	Virtual Manipulatives; <a href="#">Pattern Blocks</a>
K.P.3	Identify, reproduce, describe, extend, and create color, rhythmic, shape, number, and letter repeating patterns with simple attributes (e.g., ABABAB).	Identify, reproduce, describe, extend, and create color, rhythmic, shape, number, and letter repeating patterns with simple attributes (e.g., ABABAB).	Edmark's Millie's Math House; Bing & Boing Edmark's Mighty Math Carnival Countdown; Pattern Block Round-up Virtual Manipulatives; <a href="#">Color Patterns</a> , <a href="#">Pattern Blocks</a>
K.P.4	Count by fives and tens at least up to 50.	Count by fives and tens at least up to 50.	Edmark's Mighty Math Zoo Zillions; Annie's Jungle Trail

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	State Standard	Student Expectations	Software/Websites
K.G.1	Name, describe, sort, and draw simple, two-dimensional shapes.	Name, describe, sort, and draw simple, two-dimensional shapes (e.g. square, circle, triangle...).	Edmark's Mighty Math Carnival Countdown; Carnival Cars, Pattern Block Roundup Virtual Manipulatives; <a href="#">Pattern Blocks</a> <a href="#">MassLearns.com</a>
K.G.2	Describe the attributes of two-dimensional shapes (e.g., number of sides, number of corners).	Describe the attributes of two-dimensional shapes (e.g., number of sides, number of corners).	Edmark's Mighty Math Carnival Countdown; Carnival Cars, Pattern Block Roundup Virtual Manipulatives; <a href="#">Pattern Blocks</a> <a href="#">MassLearns.com</a>
K.G.3	Name and compare three-dimensional shapes.	<ul style="list-style-type: none"> <li>Match, name, and compare three-dimensional shapes (e.g., sphere, cube).</li> </ul>	Virtual Manipulatives; <a href="#">Geoboard Isometric</a> , <a href="#">Platonic Solids</a> Edmark's Mighty Math; Carnival Countdown; Pattern Block Roundup Edmark's Mighty Math; Zoo Zillions, 3D Gallery <a href="#">MassLearns.com</a>
K.G.4	Identify positions of objects in space, and use appropriate language (e.g., beside, inside, next to, close to, above, below, apart) to describe and compare their relative positions.	Identify positions of objects in space, and use appropriate language (e.g., beside, inside, next to, close to, above, below, apart) to describe and compare their relative positions. See Math Frameworks, Nov. 2000, p. 37.	Virtual Manipulatives Edmark's Mighty Math Carnival Countdown, Pattern Block Roundup Edmark's Might Math Zoo Zillions; 3D Gallery <a href="#">MassLearns.com</a>

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	State Standard	Student Expectations	Software/Websites
K.M.1	Recognize and compare the attributes of length, volume/capacity, weight, area, and time using appropriate language, e.g., longer, taller, shorter, same length, heavier, lighter, same weight, holds more, holds less, holds the same amount.	Recognize and compare the attributes of length (longer, shorter), of volume or capacity holds (more, less), weight (heavier, lighter), area (more, less), time (yesterday, today, tomorrow), and temperature (hotter, colder)	<a href="http://MassLearns.com">MassLearns.com</a>
K.M.2	Make and use estimates of measurements from everyday experiences.	Make and use estimates of measurements from everyday experiences.	<a href="http://MassLearns.com">MassLearns.com</a>
K.M.3	Use non-standard units to measure length, area, weight, and capacity.	<ul style="list-style-type: none"> <li>• Match, name, and compare three-dimensional shapes (e.g., sphere, cube).</li> </ul>	<a href="http://MassLearns.com">MassLearns.com</a>

# Mathematics Resource Map

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### KINDERGARTEN

Strand: Data Analysis, Statistics, and Probability

*Students will engage in **problem solving, communicating, reasoning, connecting** and **representing** as they*

	State Standard	Student Expectations	SFAW	Other	Software/Websites
<b>K.D.1</b>	Collect, sort, organize, and draw conclusions about data using concrete objects, pictures, numbers, and graphs.	<ul style="list-style-type: none"> <li>• Use counters to represent data from a simple survey</li> <li>• Sort a variety of objects (fruit, toy animal, etc.) and place them on a graphic mat to create a concrete graph using numbers to 10.</li> <li>• Demonstrate an understanding of at least one fact shown by first-hand data (e.g., count the number of students who stand in each line to show their favorite kind of ice cream).</li> <li>• Verbally state a reason for the results shown on one part of a pictorial table, chart, or graph.</li> <li>• Collect, sort, organize, and draw conclusions about data using concrete objects, pictures, numbers, and graphs.</li> </ul>			Virtual Manipulatives; <a href="#">Bar Charts</a> , <a href="#">Pie Charts</a> GraphClub <a href="#">MassLearns.com</a>

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<b>GRADE ONE</b>					
<b>Strand: Number Sense and Operations</b>					
<i>Students will engage in <b>problem solving, communicating, reasoning, connecting</b> and <b>representing</b> as they:</i>					
State Standard		Student Expectations	TB	SFAW	Software
2.N.1	Name and write (in numerals) whole numbers to 1000, identify the place values of the digits, and order the numbers.	Create and label sets of objects from 0 to 100. Demonstrate an understanding of the concepts of tens and ones (e.g. base ten blocks, number lines) using a variety of manipulatives. Recognize dictated numbers from 0-100	Units 2, 9, 11, 17	Lessons 1-12, 7-1, 7-3, 7-10, 7-13, 8-1-8-4, 8-6, 8- 8-8-10, 8-17, 11-14	Virtual Manipulatives; <a href="#">Base Block Addition</a> , <a href="#">Number Line Bounce</a> TimeLiner Edmark's Millie's Math House ;What's My Number?, Number Machine, Build-a-Bug <a href="#">MassLearns.com</a>
2.N.2	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 measurement.	Distinguish between cardinal ("there are 2") and ordinal ("it's the second one") numbers verbally. Use ordinal numbers (1 <sup>st</sup> – 31 <sup>st</sup> ). Measure common objects using non-standard units of measure. Measure common objects using a ruler to the nearest inch.	Unit 17	Lessons 7-12, 7-13	<a href="#">MassLearns.com</a>
2.N.3	Identify and represent common fractions ( $\frac{1}{2}$ , $\frac{1}{3}$ , $\frac{1}{4}$ ) as parts of wholes, parts of groups, and numbers on the number line.	Identify fair shares in halves, thirds and fourths. (Introduced) Describe one unit of a fraction as "one-half", "one-third" or "one-fourth" ( $\frac{1}{2}$ , $\frac{1}{3}$ , $\frac{1}{4}$ ) (Introduced)	Units 5, 17, 18	Lessons 5-10to5-14	Virtual Manipulatives; <a href="#">Fractions Naming</a> , <a href="#">Fractions Parts of a Whole</a> , <a href="#">Fractions Visualizing</a> <a href="#">Illuminations-Fraction Cakes</a> <a href="#">MassLearns.com</a>
2.N.4	Compare whole numbers using terms and symbols (e.g., less than, equal to, greater than [ $<$ , $=$ , $>$ ]).	Compare whole numbers to 100 using terms and symbols (e.g., less than, equal to, greater than [ $<$ , $=$ , $>$ ]).	Unit 9	Lessons 1-11, 1-12 8-7, 8-9 9-5, 9-10 12-11	Edmark's Mighty Math Zoo Zillions; Number Line Express Edmark's Mighty Math Carnival Countdown; Carnival Car, Giggle Factory <a href="#">MassLearns.com</a> <a href="#">Illuminations I-Maths</a>
2.N.5	Identify odd and even numbers and determine whether a set of objects has an odd or even number of elements.	Identify odd and even numbers and determine whether a set of objects has an odd or even number of elements.	Units 4, 13	Lessons 7-11, 7-13 9-10	<a href="#">Illuminations I-Maths</a>
2.N.6	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 \$.50. Use appropriate notation, e.g., \$69, \$1.35.	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 give appropriate ways to represent an amount of money up to \$0.50. Recognize appropriate notation, e.g., 69¢, \$1.35 (Introduced)	Unit 5	Lessons 9-1 to 9-10 12-11	Edmark's Mighty Math Zoo Zillions; Gnu Ewe Boutique

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<b>GRADE ONE</b>					
<b>Strand: Number Sense and Operations (cont.)</b>					
<i>Students will engage in <b>problem solving, communicating, reasoning, connecting and representing</b> as they:</i>					
State Standard		Student Expectations	TB	SFAW	Software
2.N.7	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 remaining]).	Represent visually presented addition or subtraction problems (acted out or in pictures) (0-20) with a number sentence. Solve addition and subtraction number sentences up to 20 using manipulatives.	Units 4, 5, 8	Lessons 1-4 to 1-10, 1-13 2-1 to 2-4, 2-7 to 2-14 3-1 to 3-8 4-1 to 4-3 8-5 to 8-6, 8-17 11-1 to 11-4, 11-11	Virtual Manipulatives; <a href="#">Base Blocks Addition</a> , <a href="#">Base Blocks Subtraction</a> , <a href="#">Chip Abacus</a> , <a href="#">Number Line Bars</a> , <a href="#">Number Line Arithmetic</a> , <a href="#">Number Line Bounce</a> Edmark's Mighty Math Carnival; Carnival Cars, Snap Clowns Edmark's Mighty Math Zoo Zillions; Fish Stories, Number Line Express <a href="#">MassLearns.com</a>
2.N.8	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.	Use numbers to solve real problems 0-20. (How many cartons of milk do we need if everyone needs one?) Show a basic understanding of how to reverse a simple addition or subtraction problem.	Units 8, 13	Lessons 4-3, 4-5 to 4-7, 4-9, 11-8 to 11-10, 11-14	Edmark's Mighty Math Zoo Zillions; Fish Stories, Annie's Jungle Trail Edmark's Mighty Math Carnival Countdown; Carnival Cars, Snap Clowns <a href="#">MassLearns.com</a>
2.N.9	Know addition facts (addends to 10) and related subtraction facts, and use them to solve problems.	Memorize addition and subtraction facts of numbers 0-12.	Units 4, 8, 13	Lessons 2-2 to 2-12, 2-15 3-1 to 3-10, 4-1 to 4-9	Edmark's Mighty Math Zoo Zillions; Annie's Jungle Trail Edmark's Mighty Math Carnival Countdown; Snap Clowns <a href="#">MassLearns.com</a>
2.N.10	Demonstrate the ability to add and subtract three-digit numbers accurately and efficiently.	Combine and separate sets of objects 0-20.	Units 8, 13	Enrichment p. 487	Edmark's Mighty Math Carnival Countdown; Carnival Cars, Snap Clowns
2.N.11	Demonstrate in the classroom an understanding of and the ability to use the conventional algorithms for addition (two 3-digit numbers and three 2-digit numbers) and subtraction (two 3-digit numbers).	Demonstrate in the classroom an understanding of and the ability to use the conventional algorithms for addition and subtraction for 0-20. Introduce 3-digit numbers	Units 8, 13	Enrichment p. 487	Virtual Manipulatives; <a href="#">Base Blocks Addition</a> , <a href="#">Base Blocks Subtraction</a> , <a href="#">Chip Abacus</a> , <a href="#">Number Line Bars</a> , <a href="#">Number Line Arithmetic</a> , <a href="#">Number Line Bounce</a> Edmark's Mighty Math Zoo Zillions; Annie's Jungle Trail Edmark's Mighty Math Carnival Countdown; Snap Clowns <a href="#">MassLearns.com</a>
2.N.12	Estimate, calculate, and solve problems involving addition and subtraction of two-digit numbers. Describe differences between estimates and actual calculations.	Estimate whether a sum or difference will be closer to 0 or 10. Solve addition and subtraction problems accurately after making reasonable estimations (sets up to 20). Round whole numbers through 100 to the nearest tens (using a number line). (Introduced)	Units 6, 8, 13	Lessons 8-5, 12-1 to 12-9, 12-11	Edmark's Mighty Math Zoo Zillions; Annie's Jungle Trail Edmark's Mighty Math Carnival Countdown; Snap Clowns, Giggle Factory <a href="#">MassLearns.com</a>

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<b>GRADE ONE</b>					
<b>Strand: Patterns, Relations, and Algebra</b>					
<i>Students will engage in <b>problem solving, communicating, reasoning, connecting</b> and <b>representing</b> as they:</i>					
	State Standard	Student Expectations	TB	SFAW	Software
2.P.1	Identify, reproduce, describe, extend, and create simple rhythmic, shape, size, number, color, and letter repeating patterns.	Identify, extend, and create a variety of rhythmic, visual, shape, size, color, letter, number, and verbal two- and three-element patterns (e.g., ABBABB, ABCABC, etc.).	Units 2, 7, 8, 13, 14	Lessons 1-1 to1-3, 1-13	Edmark's Mighty Math Carnival Countdown; Carnival Cars, Pattern Block Roundup Edmark's Millie's Math House; Little, Middle, Big Overview, Mouse House, Bing & Boing Virtual Manipulatives; <a href="#">Number Patterns</a> , <a href="#">Color Patterns</a> <a href="#">MassLearns.com</a>
2.P.2	Identify different patterns on the hundreds chart.	Describe various simple patterns on a number chart 1 -100.	Units 13, 14	Lessons 7-3, 7-7	Virtual Manipulatives; <a href="#">Number Patterns</a> Edmark's Millie's Math House; Build-A-Bug <a href="#">MassLearns.com</a>
2.P.3	Describe and create addition and subtraction number patterns (e.g., 1, 4, 7, 10 ..., or 25, 23, 21....).	Describe and create addition and subtraction number patterns (e.g., 2, 4, 6 or 5, 10, 15, or 100, 90, 80).	Unit 14	Lessons 7-8, 7-9	Edmark's Millie's Math House; Number Machine Edmark's Might Math Carnival Countdown; Carnival Cars, Bubble Band <a href="#">MassLearns.com</a>
2.P.4	Skip count by twos, fives, and tens up to at least 50, starting at any number.	Skip count by twos to 100, fives and tens to 100, starting at any number.	Units 5, 11, 13, 14	Lessons 7-2, 7-4, 7-6 to 7-8	Edmark's Might Math Zoo Zillions; Number Line Express Virtual Manipulatives; <a href="#">Number Line Bounce</a>
2.P.5	Construct and solve open sentences that have variables (e.g., $\square + 7 = 100$ ).	Construct and solve open sentences that have missing addends and subtrahends (up to 12)	Units 2, 4, 8, 6,11,16 <small>(variables)</small>	Lessons 3-8, 3-10 4-6, 4-9	
2.P.6	Write number sentences using +, -, <, =, and/or > to represent mathematical relationships in everyday situations.	Write number sentences using +, -, and =, to represent mathematical relationships in everyday situations up to 100. Introduce writing number sentences using < and > to represent mathematical relationships in everyday situations up to 100.	Units 2, 8	Lessons 2-3, 2-4, 2-6, 2-9, 2-10, 2-14, 2-15: 3-5 to 3-7, 3-9, 3-10: 4-4, 4-8, 4-9: 6-11: 9-9: 11-8, 11-13: 12-1	Edmark's Mighty Math Carnival Countdown; Carnival Cars, Giggle Factory Edmark's Mighty Math Zoo Zillions; Annie's Jungle Trail <a href="#">MassLearns.com</a>
2.P.7	Describe functions related to trading, including coin trades and measurement trades (e.g., five pennies make one nickel or four cups make a quart).	Describe functions related to trading, including coin trades (e.g., five pennies makes one nickel. ...).	Unit 5 <small>(see measurement)</small>	Lesson 10-9	Edmark's Mighty Math Zoo Zillions; Gnu Ewe Boutique

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<b>GRADE ONE</b>					
<b>Strand: Geometry</b>					
<i>Students will engage in <b>problem solving, communicating, reasoning, connecting</b> and <b>representing</b> as they:</i>					
State Standard		Student Expectations	TB	SAFW	Software
2.G.1	Describe attributes and parts of two- and three-dimensional shapes (e.g., length of sides, and number of corners, edges, faces, and sides).	Describe attributes and parts of two- and three-dimensional shapes (e.g., faces, sides, and corners).	Units 3, 7, 10	Lessons 5-2, 5-3, 5-5	Virtual Manipulatives; <a href="#">Geoboard Isometric</a> , <a href="#">Pattern Blocks</a> , <a href="#">Platonic Solids</a> Edmark's Mighty Math Carnival Countdown; Pattern Block Roundup Edmark's Might Math Zoo Zillions; 3D Gallery <a href="#">MassLearns.com</a>
2.G.2	Identify, describe, draw, and compare two-dimensional shapes, including both polygonal (up to six sides) and curved figures such as circles.	Identify, describe, draw, and compare two-dimensional shapes including polygons (up to eight sides) and circles.	Units 3, 7, 10	Lesson 5-4, 5-5, 5-6	Virtual Manipulatives; <a href="#">Pattern Blocks</a> Edmark's Mighty Math Carnival Countdown; Pattern Block Roundup
2.G.3	Recognize congruent shapes.	Recognize congruent shapes (see above). Use the term "congruent".	Units 3, 7, 10	Lesson 5-6	Edmark's Mighty Math Carnival Countdown; Pattern Block Roundup Edmark's Might Math Zoo Zillions ; 3D Gallery Virtual Manipulatives; <a href="#">Pattern Blocks</a> , <a href="#">Congruent Triangles</a> , <a href="#">Geoboard</a>
2.G.4	Identify shapes that have been rotated (turned), reflected (flipped), translated (slid), and enlarged. Describe direction of translations (e.g., left, right, up, down).	Demonstrate flips, slides, and turns with their bodies. Identify shapes that have been turned, flipped, slid, and enlarged.	Units 7, 18	Lesson 5-8	Virtual Manipulatives; <a href="#">Transformations Reflection</a> , <a href="#">Transformations Rotation</a> , <a href="#">Transformations Translation</a> Edmark's Mighty Math Carnival Countdown; Pattern Block Roundup Edmark's Might Math Zoo Zillions; 3D Gallery
2.G.5	Identify symmetry in two-dimensional shapes.	Identify horizontal and vertical lines of symmetry in two-dimensional shapes.	Units 7, 18	Lessons 5-7, 5-16	Virtual Manipulatives; <a href="#">Transformations Reflection</a>
2.G.6	Predict the results of putting shapes together and taking them apart.	Predict and confirm the results of putting shapes together and taking them apart.	Units 3, 7, 15	Lesson 5-9	Virtual Manipulatives; <a href="#">Tessellations</a> <a href="#">MassLearns.com</a>
2.G.7	Relate geometric ideas to numbers (e.g., seeing rows in an array as a model of repeated addition).	Relate geometric ideas to numbers (e.g., seeing rows in an array as a model for addition and subtraction).	Units 3, 7, 10, 13, 15, 18	Lessons 8-1 to 8-4, 8-10 10-6, 10-7 12-1	Virtual Manipulatives <a href="#">MassLearns.com</a>

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<b>GRADE ONE</b>					
<b>Strand: Measurement</b>					
<i>Students will engage in <b>problem solving, communicating, reasoning, connecting</b> and <b>representing</b> as they:</i>					
State Standard		Student Expectations	TB	SFAW	Software
2.M.1	Identify parts of the day (e.g., morning, afternoon, evening), days of the week, and months of the year. Identify dates using a calendar.	Identify the use of a calendar and verbally identify the days of the week and months of the year. Identify parts of the day (e.g., morning, afternoon, evening). Identify dates using a calendar. Identify the four seasons.	Units 3, 11	Lessons 6-6, 6-9, 6-10, 6-11	<a href="http://MassLearns.com">MassLearns.com</a>
2.M.2	Tell time at quarter-hour intervals on analog and digital clocks using a.m. and p.m.	Tell and record time to the half hour using an analog and digital clock, and using a.m. and p.m.	Unit 12	Lessons 6-2 to 6-4	<a href="http://MassLearns.com">MassLearns.com</a>
2.M.3	Compare the length, weight, area, and volume of two or more objects by using direct comparison.	Compare length and weight of two or more objects by using direct comparison.	Unit 10	Lesson 10-2	Virtual Manipulatives; <a href="#">Congruent Triangles</a> <a href="http://MassLearns.com">MassLearns.com</a>
2.M.4	Measure and compare common objects using metric and English units of length measurement (e.g., centimeter, and inch).	Measure and compare common objects using non-standard, metric and English units of length measurement (e.g., centimeter, and inch).	Units 6, 10	Lesson 10-3 to 10-5	<a href="http://MassLearns.com">MassLearns.com</a>
2.M.5	Select and correctly use the appropriate measurement tools (e.g., ruler, balance scale, thermometer).	Select and correctly use the appropriate measurement tools (e.g., ruler, balance scale).	Units 1, 9, 10, 15, 19 TIMS Labs	Lesson 10-3 to 10-5 10-15	<a href="http://MassLearns.com">MassLearns.com</a>
2.M.6	Make and use estimates of measurement, including time, volume, weight, and area.	Make and use estimates of measurement, including time and weight.	Units 6, 9, 10, 12		<a href="http://MassLearns.com">MassLearns.com</a>

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<b>GRADE ONE</b>					
<b>Strand: Data Analysis, Statistics, Probability</b>					
<i>Students will engage in <b>problem solving, communicating, reasoning, connecting</b> and <b>representing</b> as they:</i>					
State Standard		Student Expectations	TB	SFAW	Software
2.D.1	Use interviews, surveys, and observations to gather data about themselves and their surroundings.	Take a class survey and record information.	Units 5,16	Lessons 10-3 to 10-6, 10-17	Virtual Manipulatives; <a href="#">Bar Charts</a> , <a href="#">Pie Charts</a> <a href="#">MassLearns.com</a>
2.D.2	Organize, classify, represent, and interpret data using tallies, charts, tables, bar graphs, pictographs, and Venn diagrams; interpret the representations.	Organize, classify, represent, and interpret data using tallies, charts, tables, bar graphs, pictographs, and Venn diagrams (as a class activity); interpret the representations.	Units 5, 16	Lessons 5-9, 5-15; 6-8; 7-6, 7-9; 8-13, 8-17; 9- 5, 9-10; 10-17; 11- 7; 12-10	GraphClub Virtual Manipulatives; <a href="#">Bar Charts</a> , <a href="#">Pie Charts</a> <a href="#">MassLearns.com</a>
2.D.3	Formulate inferences (draw conclusions) and make educated guesses (conjectures) about a situation based on information gained from data.	Formulate inferences (draw conclusions) and make educated guesses (conjectures) about a situation based on information gained from data.	Unit 16	Lessons 1-3 10-2 12-5	Virtual Manipulatives; <a href="#">Bar Charts</a> , <a href="#">Pie Charts</a> <a href="#">MassLearns.com</a>
2.D.4	Decide which outcomes of experiments are most likely.	Based on data gathered, decide which outcomes of experiments are most likely.	Unit 6	Lessons 10-2 10-17	Virtual Manipulatives; <a href="#">Bar Charts</a> , <a href="#">Pie Charts</a> <a href="#">MassLearns.com</a>

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<b>GRADE TWO</b>						
<b>Strand: Number Sense and Operations</b>						
<i>Students will engage in <b>problem solving, communicating, reasoning, connecting</b> and <b>representing</b> as they:</i>						
State Standard	Student Expectations	TB	SFAW	Software/Websites		
<b>2.N.1</b>	Name and write (in numerals) whole numbers to 1000, identify the place values of the digits, and order the numbers.	Create and label sets of objects from 0 to 1000. Demonstrate an understanding of the concepts of place value—ones, tens, and hundreds to 1,000 using manipulatives (e.g., base ten blocks, number lines). Write dictated whole numbers from 0 to 1,000 with correct place value.	Units 1,5,6	Lessons 3-1-3-5, 3-7 4-4, 4-12 10-1-10-4, 10-8, 10-11	Virtual Manipulatives; <a href="#">Base Block Addition</a> , <a href="#">Number Line Bounce</a> TimeLiner Edmark's Millie's Math House; What's My Number?, Number Machine, Build-a-Bug <a href="#">MassLearns.com</a>	
<b>2.N.2</b>	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 measurement.	Identify and distinguish among multiple uses of numbers including cardinal (to tell how many, 1-1000) and ordinal (to tell which one in an ordered list, to 1000th), and numbers as labels and as measurement. Use a standard ruler to measure to nearest half-inch. Use a metric ruler to measure to the nearest cm.		Lessons 3-10	<a href="#">MassLearns.com</a>	
<b>2.N.3</b>	Identify and represent common fractions ( $\frac{1}{2}$ , $\frac{1}{3}$ , $\frac{1}{4}$ ) as parts of wholes, parts of groups, and numbers on the number line.	Identify and represent common fractions ( $\frac{1}{2}$ to $\frac{7}{8}$ ) as parts of wholes, parts of groups, and numbers on the number line. Use the terms "numerator" and "denominator" correctly. Introduce adding simple fractions with like denominators using manipulatives ( $\frac{1}{4} + \frac{2}{4} + \frac{3}{4}$ )	Units 14, 20	Lessons 7-9-7-11, 7-13	Virtual Manipulatives; <a href="#">Fractions Naming</a> , <a href="#">Fractions Parts of a Whole</a> , <a href="#">Fractions Visualizing</a> <a href="#">MassLearns.com</a>	
<b>2.N.4.</b>	Compare whole numbers using terms and symbols (e.g., less than, equal to, greater than [ $<$ , $=$ , $>$ ]).	Read, write, compare ( $>$ , $<$ , $=$ , odd, even), and order whole numbers to 1,000.		Lessons 3-5 10-5, 10-11	Edmark's Mighty Math Zoo Zillions; Number Line Express Edmark's Mighty Math Carnival Countdown; Carnival Cars, Giggle Factory <a href="#">MassLearns.com</a>	
<b>2.N.5</b>	Identify odd and even numbers and determine whether a set of objects has an odd or even number of elements.	Identify odd and even numbers and determine whether a set of objects has an odd or even number of elements. Predict whether a simple addition problem will have an even or odd answer.	Unit 2	Lessons 3-9, 3-11		
<b>2.N.6</b>	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 \$.50. Use appropriate notation, e.g., \$.69, \$1.35.	Identify the value of all U.S. coins, and \$1, \$5, \$10, and \$20 bills. Find the value of a collection of coins and bills and different ways to represent an amount of money up to \$5. Use appropriate notation (e.g., \$0.69, \$1.35).	Units 1, 2, 20	3-12-3-16, 3-18 5-5 6-6	Edmark's Mighty Math Zoo Zillions; Gnu Ewe Boutique	

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<b>GRADE TWO</b>					
<b>Strand: Number Sense and Operations (cont.)</b>					
<i>Students will engage in <b>problem solving, communicating, reasoning, connecting</b> and <b>representing</b> as they:</i>					
State Standard		Student Expectations	TB	SFAW	Software
<b>2.N.7</b>	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 remaining]).	Write a number sentence to represent visually presented addition or subtraction problems ((manipulatives or in pictures) (0-100's). Use mental math to add and subtract whole numbers to 20. Add or subtract one-, two-, and three-digit numbers using pencil and paper, and an appropriate algorithm (with and without regrouping).	Unit 2	Lessons 1-1, 1-4, 1-5, 1-8	Edmark's Mighty Math Carnival; Carnival Edmark's Mighty Math Carnival; Carnival Cars, Snap Clowns Edmark's Mighty Math Zoo Zillions; Fish Stories, Number Line Express Virtual Manipulatives; <a href="#">Base Blocks Addition</a> , <a href="#">Base Blocks Subtraction</a> , <a href="#">Chip Abacus</a> , <a href="#">Number Line Bars</a> , <a href="#">Number Line Arithmetic</a> , <a href="#">Number Line Bounce</a> <a href="#">MassLearns.com</a>
<b>2.N.8</b>	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.	Explain and demonstrate the relationship between addition and subtraction (fact families). Use the appropriate operation (addition or subtraction) to solve single-step problems.	Unit 20	Lessons 1-10 2-9, 2-10, 2-11, 6-7	Edmark's Mighty Math Zoo Zillions; Fish Stories, Annie's Jungle Trail Edmark's Mighty Math Carnival Countdown; Carnival Cars, Snap Clowns <a href="#">MassLearns.com</a>
<b>2.N.9</b>	Know addition facts (addends to 10) and related subtraction facts, and use them to solve problems.	Demonstrate an understanding of addition and subtraction of numbers 10-20. Memorize addition facts (addends to 10) and related subtraction facts, and use them to solve problems.	Units 9, 11	Lessons 10-4, 10-6, 10-7, 10-11 11-1, 11-3- 11-7, 11-9- 11-11, 11-13	Edmark's Mighty Math Zoo Zillions; Fish Stories, Annie's Jungle Trail Edmark's Mighty Math Carnival Countdown; Snap Clowns <a href="#">MassLearns.com</a>
<b>2.N.10</b>	Demonstrate the ability to add and subtract three-digit numbers accurately and efficiently.	Demonstrate an understanding of the concepts of addition and subtraction of any two- and three-digit numbers 0-999 by adding and subtracting 3 digit numbers accurately (with and without regrouping).	Units 9, 11	Lessons 1-2-1-12, 2-1-2-12 3-19, 4-12, 5-11, 9-16	Edmark's Mighty Math Carnival Countdown; Carnival Cars, Snap Clowns Virtual Manipulatives; <a href="#">Base Blocks Addition</a> , <a href="#">Base Blocks Subtraction</a>

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<b>2.N.11</b>	Demonstrate in the classroom an understanding of and the ability to use the conventional algorithms for addition (two 3-digit numbers and three 2-digit numbers) and subtraction (two 3-digit numbers).	Demonstrate in the classroom an understanding of and the ability to use the conventional algorithms for addition (two 3-digit numbers and three 2-digit numbers) and subtraction (two 3-digit numbers) with and without regrouping.	Units 9, 11	Lessons 11-4, 11-5, 11-10, 11-11	Edmark's Mighty Math Zoo Zillions; Annie's Jungle Trail Edmark's Mighty Math Carnival Countdown; Snap Clowns Virtual Manipulatives; <a href="#">Base Blocks Addition</a> , <a href="#">Base Blocks Subtraction</a> , <a href="#">Chip Abacus</a> , <a href="#">Number Line Bars</a> , <a href="#">Number Line Arithmetic</a> , <a href="#">Number Line Bounce</a> <a href="#">MassLearns.com</a>
<b>2.N.12</b>	Estimate, calculate, and solve problems involving addition and subtraction of two-digit numbers. Describe differences between estimates and actual calculations.	Estimate a logical solution to a problem and recognize when an estimate is appropriate. Estimate sums and differences when working with quantities, measurement, and computation to 100. Explain how an estimate differs from an actual calculation Round whole numbers through 1,000 to the nearest 10 and 100.	Units 3, 9, 11		Edmark's Mighty Math Zoo Zillions; Annie's Jungle Trail Edmark's Mighty Math Carnival Countdown; Snap Clowns, Giggle Factory <a href="#">MassLearns.com</a>

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<b>GRADE TWO</b>					
<b>Strand: Patterns, Relations, and Algebra</b>					
<i>Students will engage in <b>problem solving, communicating, reasoning, connecting</b> and <b>representing</b> as they:</i>					
State Standard		Student Expectations	TB	SFAW	Software/Websites
2.P.1	Identify, reproduce, describe, extend, and create simple rhythmic, shape, size, number, color, and letter repeating patterns.	Identify, extend, and construct a variety of rhythmic, shape, size, color, letter, number, verbal, and visual patterns up to five elements. Identify and extend a two-element numerical pattern up to 100.	Units 3,12	Diagnostic Checkpt p. 165 ex.2 Ch test p. 172 ex. 16 pp.411-412, 417, 420, 424	Edmark's Mighty Math Carnival Countdown; Carnival Cars, Pattern Block Roundup Edmark's Millie's Math House; Little, Middle, Big Overview, Mouse House, Bing & Boing Illuminations Virtual Manipulatives; <a href="#">Number Patterns</a> , <a href="#">Color Patterns</a> <a href="#">MassLearns.com</a> <a href="#">Patterns, Relations, and Algebra</a>
2.P.2	Identify different patterns on the hundreds chart.	Describe various patterns on a number chart 1 - 100.	Units 2, 12	Lessons 3-7-3-9 4-9, 10-8	Virtual Manipulatives; <a href="#">Number Patterns</a> Edmark's Millie's Math House; Build-A-Bug <a href="#">MassLearns.com</a>
2.P.3	Describe and create addition and subtraction number patterns (e.g., 1, 4, 7, 10 ..., or 25, 23, 21....).	Describe and create addition and subtraction number patterns (e.g., 1, 4, 7, 10...; or 25, 23, 21...).	Unit 12	Lessons 4-9 10-10	Edmark's Millie's Math House; Number Machine Edmark's Might Math Carnival Countdown; Carnival Cars, Bubble Band <a href="#">MassLearns.com</a>
2.P.4	Skip count by twos, fives, and tens up to at least 50, starting at any number.	Skip count by twos, fives, and tens to 100, starting at any number.	Unit 2	Lessons 3-1, 3-8, 8-12, 8-16, 12-2	Edmark's Might Math Zoo Zillions; Number Line Express Virtual Manipulatives; <a href="#">Number Line Bounce</a>
2.P.5	Construct and solve open sentences that have variables (e.g., $\square + 7 = 100$ ).	Construct and solve open sentences that have missing addends and subtrahends.( up to 1,000)	Unit 13	Lessons 1-9, 1-11 2-11, 2-12 11-7	
2.P.6	Write number sentences using +, -, <, =, and/or > to represent mathematical relationships in everyday situations.	Write number sentences using +, -, <, =, and/or > to represent mathematical relationships in everyday situations (up to 100)	Unit 1	Lessons 1-2, 1-3, 1-6, 1-7, 1-12 2-2, 2-12, 4- 12, 5-11, 6-5, 6-11, 10-11, 8- 17	Edmark's Mighty Math Carnival Countdown; Carnival Cars, Giggle Factory Edmark's Mighty Math Zoo Zillions; Annie's Jungle Trail <a href="#">MassLearns.com</a>
2.P.7	Describe functions related to trading, including coin trades and measurement trades (e.g., five pennies make one nickel or four cups make a quart).	Describe functions related to trading, including coin trades and measurement trades using English and metric units. (e.g. 2C=1 pint, 4 quarters = \$1.00, 7 days = 1 week, 1 ft. = 12 in., 100 cm. = 1 m.)	Unit 6	Lessons 3-12, 3-18 9-7	Edmark's Mighty Math Zoo Zillions; Gnu Ewe Boutique

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<b>GRADE TWO</b> <b>Strand: Geometry</b>					
<i>Students will engage in <b>problem solving, communicating, reasoning, connecting</b> and <b>representing</b> as they:</i>					
State Standard		Student Expectations	TB	SFAW	Software
2.G.1	Describe attributes and parts of two- and three-dimensional shapes (e.g., length of sides, and number of corners, edges, faces, and sides).	Describe attributes and parts of two- and three-dimensional shapes (e.g., corners, edges, faces and sides).	Units 15, 17	Lessons 7-1, 7-2, 7-4, 7-8, 7-14	Virtual Manipulatives; <a href="#">Geoboard</a> <a href="#">Isometric</a> , <a href="#">Pattern Blocks</a> , <a href="#">Platonic Solids</a> Illuminations Edmark's Mighty Math Carnival Countdown; Pattern Block Roundup Edmark's Might Math Zoo Zillions; 3D Gallery <a href="#">MassLearns.com</a>
2.G.2	Identify, describe, draw, and compare two-dimensional shapes, including both polygonal (up to six sides) and curved figures such as circles.	Identify, describe, draw, and compare two-dimensional shapes including both polygons (up to six sides) and curved figures, such as circles	Units 15, 17	Lessons 7-8	Virtual Manipulatives; <a href="#">Pattern Blocks</a> Edmark's Mighty Math Carnival Countdown; Pattern Block Roundup
2.G.3	Recognize congruent shapes.	Recognize congruent shapes (see above). Use the term "congruent" correctly	Unit 7	Lessons 7-5, 7-8	Edmark's Mighty Math Carnival Countdown; Pattern Block Roundup Edmark's Might Math Zoo Zillions ; 3D Gallery Virtual Manipulatives; <a href="#">Pattern Blocks</a> , <a href="#">Congruent Triangles</a> , <a href="#">Geoboard</a>
2.G.4	Identify shapes that have been rotated (turned), reflected (flipped), translated (slid), and enlarged. Describe direction of translations (e.g., left, right, up, down).	Demonstrate flips, slides, and turns with manipulatives. Identify shapes that have been turned, flipped, slid, and enlarged. Describe the direction (e.g., left, right, up, down).	Unit 15	Lessons 7-6	Virtual Manipulatives; <a href="#">Transformations Reflection</a> , <a href="#">Transformations Rotation</a> , <a href="#">Transformations Translation</a> Edmark's Mighty Math Carnival Countdown; Pattern Block Roundup Edmark's Might Math Zoo Zillions; -3D Gallery
2.G.5	Identify symmetry in two-dimensional shapes.	Identify various forms of symmetry in two-dimensional shapes (e.g. lines of symmetry, rotational symmetry).	Unit 15	Lessons 7-7, 7-8, 7-14	Virtual Manipulatives; <a href="#">Transformations Reflection</a>
2.G.6	Predict the results of putting shapes together and taking them apart.	Predict and confirm the results of putting shapes together and taking them apart.	Unit 19	Lessons 7-1, 7-4	Illuminations Virtual Manipulatives; <a href="#">Tessellations</a> <a href="#">MassLearns.com</a>
2.G.7	Relate geometric ideas to numbers (e.g., seeing rows in an array as a model of repeated addition).	Relate geometric ideas to numbers (e.g., seeing rows in an array as a model of repeated addition).	Unit 12	Lessons 12-1	<a href="#">MassLearns.com</a>

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<b>GRADE TWO</b>					
<b>Strand: Measurement</b>					
<i>Students will engage in <b>problem solving, communicating, reasoning, connecting and representing</b> as they:</i>					
State Standard	Student Expectations	TB	SAFW	Software	
2.M.1	Identify parts of the day (e.g., morning, afternoon, evening), days of the week, and months of the year. Identify dates using a calendar.	Identify the use of a calendar and verbally identify the days of the week and months of the year. Identify parts of the day (e.g., morning, afternoon, evening). Identify dates using a calendar. Relate specific months to the seasons		Lessons 8-6, 8-7	<a href="http://MassLearns.com">MassLearns.com</a>
2.M.2	Tell time at quarter-hour intervals on analog and digital clocks using a.m. and p.m.	Tell and record time to the half hour, quarter hour, and five minute intervals using an analog or digital clock, and using a.m. and p.m.	Unit 6	Lessons 8-1, 8-3, 8-6, 8-10	<a href="http://MassLearns.com">MassLearns.com</a>
2.M.3	Compare the length, weight, area, and volume of two or more objects by using direct comparison.	Compare length, weight, area, and volume of two or more objects by using direct comparison.	Units 7, 12	Lessons 9-6, 9-10	Virtual Manipulatives; <a href="#">Congruent Triangles</a> <a href="http://MassLearns.com">MassLearns.com</a>
2.M.4	Measure and compare common objects using metric and English units of length measurement (e.g., centimeter, and inch).	Measure and compare common objects using metric and English units of length measurement (e.g., 36", 1 m, 100 cm). Measure to the nearest ½ inch and nearest centimeter.	Units 5, 8, 10, 16, 20	Lessons 9-2-9-4, 9-17	<a href="http://MassLearns.com">MassLearns.com</a>
2.M.5	Select and correctly use the appropriate measurement tools (e.g., ruler, balance scale, thermometer).	Select and correctly use the appropriate measurement tools (e.g., ruler, balance scale, thermometer).	Units 5, 8, 10, 18	Lessons 9-2-9-5, 9-17	<a href="http://MassLearns.com">MassLearns.com</a>
2.M.6	Make and use estimates of measurement, including time, volume, weight, and area.	Make and use estimates of measurement, including time, volume, weight, and area.	Units 4, 5, 6, 8, 16		<a href="http://MassLearns.com">MassLearns.com</a>

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<b>GRADE TWO</b>					
<b>Strand: Data Analysis, Statistics, Probability</b>					
<i>Students will engage in <b>problem solving, communicating, reasoning, connecting</b> and <b>representing</b> as they:</i>					
State Standard		Student Expectations	TB	SFAW	Software
<b>2.D.1</b>	Use interviews, surveys, and observations to gather data about themselves and their surroundings.	Use interviews, surveys, and observations to gather data about themselves and their surroundings.	Units 3, 4, 5	Lessons 8-10-8-13	<a href="http://MassLearns.com">MassLearns.com</a>
<b>2.D.2</b>	Organize, classify, represent, and interpret data using tallies, charts, tables, bar graphs, pictographs, and Venn diagrams; interpret the representations.	Organize, classify, represent, and interpret data using tallies, charts, tables, bar graphs, pictographs, and Venn diagrams; interpret the representations.	Units 2,3,4,13	Lessons 3-4, 3-11, 3-16, 5-7, 5-10, 6-11, 8-9, 8-10-8-13, 8-16, 9-14, 9-15, 10-7	Virtual Manipulatives; <a href="#">Bar Charts</a> , <a href="#">Pie Charts</a> <a href="http://MassLearns.com">MassLearns.com</a> GraphClub
<b>2.D.3</b>	Formulate inferences (draw conclusions) and make educated guesses (conjectures) about a situation based on information gained from data.	Formulate inferences (draw conclusions) and make educated guesses (conjectures) about a situation based on information gained from data.	Units 7, 12, 13, 19	Lesson 9-14	<a href="http://MassLearns.com">MassLearns.com</a> Virtual Manipulatives; <a href="#">Bar Charts</a> , <a href="#">Pie Charts</a>
<b>2.D.4</b>	Decide which outcomes of experiments are most likely.	With guided discussion, decide which outcomes of experiments are most likely	Unit 19	Lesson 9-14	Virtual Manipulatives; <a href="#">Bar Charts</a> , <a href="#">Pie Charts</a> <a href="http://MassLearns.com">MassLearns.com</a>

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<b>GRADE THREE</b>					
Strand: Number Sense and Operations					
<i>Students will engage in <b>problem solving, communicating, reasoning, connecting and representing</b> as they:</i>					
State Standard		Student Expectations	TB	SFAW	Software
3.N.1	Exhibit an understanding of the base ten number system by reading, modeling, writing, and interpreting whole numbers to at least 100,000; demonstrating an understanding of the values of the digits; and comparing and ordering the numbers.	Exhibit an understanding of the base ten number system by reading, modeling, writing, and interpreting whole numbers to at least 100,000; demonstrating an understanding of the values of the digits; and comparing and ordering the numbers.	Units 4, 6, 13, 15	Units 1, 3, 4	Virtual manipulative- <a href="#">base blocks</a> Cornerstone Level A; Lessons 1, 2, 3 Understanding Numbers <a href="#">Masslearns.com</a> Illuminations-base ten blocks DK's I Love Math Egypt
3.N.2	Represent, order, and compare large numbers (to at least 100,000) using various forms, including expanded notation, e.g., $853 = 8 \times 100 + 5 \times 10 + 3$ .	Represent, order, and compare large numbers (to at least 100,000) using various forms, including expanded notation, e.g., $853 = (8 \times 100) + (5 \times 10) + 3$ , and written form, e.g. eight hundred fifty three	Unit 4	Units 1, 2, 9	Mighty Math Carnival Countdown; Bubble Band, Giggle Factory <a href="#">Masslearns.com</a> Virtual Manipulative; <a href="#">Base Blocks</a> Cornerstone Level A; Lesson 3 Understanding Numbers DK's I Love Math Egypt
3.N.3	Demonstrate an understanding of fractions as parts of unit wholes, as parts of a collection, and as locations on the number line.	Demonstrate an understanding of fractions between zero and one to the twelfths as parts of unit wholes, as parts of a collection, and as locations on the number line. Measure to the nearest $\frac{1}{4}$ inch Locate $\frac{1}{4}$ $\frac{1}{3}$ $\frac{1}{2}$ $\frac{2}{3}$ , and $\frac{3}{4}$ on a number line Review and reinforce $\frac{1}{2}$ inch and $\frac{3}{4}$ inch	Units 11, 17	Unit 9	<a href="#">Illuminations-Tour of Fractions, No Matter What Shape Your Fractions Are In, Fraction Games</a> Edmark's Mighty Math Number Heroes; Fraction Fireworks Might Math Calculating Crew; Nautical Number Line Cornerstone Level A; Lesson 1 Using Decimals and Fractions <a href="#">Masslearns.com</a> Virtual Manipulative- <a href="#">Fractions Parts of a Whole, Fractions Visualizing</a>
3.N.4	Select, use, and explain models to relate common fractions and mixed numbers ( $\frac{1}{2}$ , $\frac{1}{3}$ , $\frac{1}{4}$ , $\frac{1}{6}$ , $\frac{1}{8}$ , $\frac{1}{12}$ , and $1\frac{1}{2}$ ), find equivalent fractions, mixed numbers, and decimals, and order fractions.	Select, use, and explain models to relate common fractions and mixed numbers to eighths. Compare ( $<$ , $>$ , $=$ ) and order decimal numbers to hundredths. Show which fractions are equivalent (using manipulatives)	Units 11, 15, 17	Units 9, 10	<a href="#">Illuminations-Fraction Games, Fraction City, Hungry For Math Fraction Card Game</a> Edmark's Mighty Math Calculating Crew; Nautical Number Line Virtual Manipulative- <a href="#">Fractions Parts of a Whole, Fractions Equivalent, Fractions Comparing</a> Timeliner
3.N.5	Identify and generate equivalent forms of common decimals and fractions less than one whole (halves, quarters, fifths, and tenths).	Identify and generate equivalent forms of common decimals and fractions less than one whole (halves and quarters).	Units 15, 17	Unit 10	<a href="#">Illuminations-Decimals, Fractions and Percents</a> <a href="#">Masslearns.com</a> Virutal Manipulative- <a href="#">Base Blocks Decimals, Fractions Parts of a Whole, Fractions Equivalent</a> DK's I Love Math Egypt, Atlantis

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Number Sense and Operations (cont)					
3.N.6	Exhibit an understanding of the base ten number system by reading, naming, and writing decimals between 0 and 1 up to the hundredths.	Exhibit an understanding of the base ten number system by reading, naming, and writing decimals between 0 and 1 up to tenths.	Unit 13		Virtual Manipulatives- <a href="#">Base blocks decimals</a> Cornerstone Level A; Lesson 2 Using Decimals and Fractions <a href="#">Masslearns.com</a>
3.N.7	Recognize classes (in particular, odds, evens; factors or multiples of a given number; and squares) to which a number may belong, and identify the numbers in those classes. Use these in the solution of problems.	Recognize classes (in particular, odds, evens; and factors or multiples of a given number) to which a number may belong, and identify the numbers in those classes. Use these in the solution of problems.	Unit 15	Units 1, 5, 6	Mighty Math Zoo Zillions; Annie's Jungle Trail Figures This! ( <a href="#">www.figurethis.org</a> ) <a href="#">Masslearns.com</a> Virtual Manipulative <a href="#">Base Blocks</a>
3.N.8	Select, use, and explain various meanings and models of multiplication and division of whole numbers. Understand and use the inverse relationship between the two operations.	Select, use, and explain various meanings and models of multiplication (up to $10 \times 10$ ) and division of whole numbers. Understand and use the inverse relationship between the two operations. Draw a model and describe multiplication as repeated addition. Draw a model and describe division as repeated subtraction.	Unit 7	Units 5, 7, 10	Virtual Manipulative- <a href="#">Base Blocks</a> , <a href="#">Base Blocks Addition</a> , <a href="#">Base Blocks Subtraction</a> Edmark's Mighty Math Calculating Crew; Nick Knack Supertrader Edmark's Mighty Math Number Heroes; Quizzo Illuminations- <a href="#">Multiplication: An Adventure in Number Sense</a> <a href="#">Masslearns.com</a>
3.N.9	Select, use, and explain the commutative, associative, and identify properties of operations on whole numbers in problem situations (e.g., $37 \times 46 = 46 \times 37$ , $[5 \times 7] \times 2 = 5 \times [7 \times 2]$ ).	Select, use, and explain the commutative (order) property and associative (grouping), and identify these property on whole numbers (e.g., $37 \times 46 = 46 \times 37$ , $[5 \times 7] \times 2 = 5 \times [7 \times 2]$ ).	Units 13, 19	Units 2, 5, 6	<a href="#">Masslearns.com</a>
3.N.10	Select and use appropriate operations (addition, subtraction, multiplication, and division) to solve problems, including those involving money.	Select and use appropriate operations (addition, subtraction, multiplication, and division) to solve problems, including those involving money.	Units 3, 13	Units 1, 2, 3, 4, 5, 7, 9, 10, 11,12	<a href="#">Illuminations</a> Cornerstone Level A; Lesson 3, Using Decimals and Fractions Edmark's Mighty Math Carnival Countdown; Carnival Cars Edmark's Zoo Zillions; Fish Stories; Gnu Ewe Boutique Edmark's Calculating Crew; Superhero Superstore <a href="#">Masslearns.com</a>
3.N.11	Know multiplication facts through $12 \times 12$ and related division facts. Use these facts to solve related multiplication problems and compute related problems (e.g., $3 \times 5$ is related to $30 \times 50$ , $300 \times 5$ , and $30 \times 500$ ).	Know multiplication facts through $10 \times 10$ and related division facts. Use these facts to solve related multiplication problems and compute related problems (e.g., $3 \times 5$ is related to $30 \times 50$ , $300 \times 5$ , and $30 \times 500$ ).	Units 3, 13	Units 5, 6, 7, 8, 10, 11	Mighty Math Calculating Crew; Nautical Number Line; Nick Knack Supertrader Mighty Math Number Heroes; Quizzo DK's I Love Math Egypt <a href="#">MassLearns.com</a>
3.N.12	Add and subtract (up to five-digit numbers) and multiply (up to three digits by two digits) accurately and efficiently.	Add and subtract (up to four-digit numbers) and multiply one- and two-digit numbers by another one-digit number accurately and efficiently and by multiples of 10	Units 6, 14, 19	Units 2, 3, 4, 7, 9, 10, 11	Might Math Number Heroes; Quizzo Edmark's Carnival Countdown; Bubble Band Edmark's Mighty Math Calculating Crew; Nautical Number Line; Nick Knack Supertrader Cornerstone Level A; Lessons 5,6 Using + and - <a href="#">MassLearns.com</a>

## Mathematics Resource Map K-5

Number Sense and Operations (cont)					
3.N.13	Divide up to a three-digit whole number with a single-digit divisor (with or without remainders) accurately and efficiently. Interpret any remainders.	Introduce dividing up to a two-digit whole number with a single-digit divisor (without remainders) accurately and efficiently.	Unit 19	Units 7, 11	Cornerstone Level A; Lesson 2 Using Multiplication and Division DK's I Love Math Egypt <a href="http://MassLearns.com">MassLearns.com</a>
3.N.14	Demonstrate in the classroom an understanding of and the ability to use the conventional algorithms for addition and subtraction (up to five-digit numbers), and multiplication (up to three digits by two digits).	Demonstrate in the classroom an understanding of and the ability to use the conventional algorithms for addition and subtraction (up to four-digit numbers), and multiplication (up to two digits by one digit).	Unit 7	Units 3, 11	Virtual Manipulate- <a href="#">Base Blocks</a> Mighty Math Calculating Crew; Nautical Number Line; Nick Knack Supertrader Mighty Math Number Heroes; Quizzo
3.N.15	Demonstrate in the classroom an understanding of and the ability to use the conventional algorithm for division of up to a three-digit whole number with a single-digit divisor (with or without remainders).	Demonstrate in the classroom an understanding of and the ability to use the conventional algorithm for division of up to a two-digit whole number with a single-digit divisor (with or without remainders).		Unit 11	Virtual Manipulate- <a href="#">Base Blocks</a> Mighty Math Calculating Crew; Nautical Number Line; Nick Knack Supertrader Mighty Math Number Heroes; Quizzo <a href="http://MassLearns.com">MassLearns.com</a> Cornerstone Level A; Lesson 2 Using Multiplication and Division
3.N.16	Round whole numbers through 100,000 to the nearest 10, 100, 1000, 10,000, and 100,000.	Round whole numbers through 1,000 to the nearest 10s and 100s.		Units 1, 3	Mighty Math Calculating Crew; Nautical Number Line <a href="http://Masslearns.com">Masslearns.com</a> Cornerstone Level A; Lesson 4 Using Multiplication and Division
3.N.17	Select and use a variety of strategies (e.g., front-end, rounding, and regrouping) to estimate quantities, measures, and the results of whole-number computations up to three-digit whole numbers and amounts of money to \$1000, and to judge the reasonableness of the answer.	Select and use a variety of strategies (e.g., front-end, rounding, and regrouping) to estimate quantities, measures, and the results of whole-number computations (addition and subtraction) up to three-digit whole numbers and amounts of money to \$1000, and to judge the reasonableness of the answer.		Units 2, 3, 6, 11	Cornerstone Level A; Lesson 4 Using Multiplication and Division; Lesson 4 Using Addition and Subtraction Mighty Math Calculating Crew; Nautical Number Line; Superhero Superstore DK's I Love Math; Greece
3.N.18	Use concrete objects and visual models to add and subtract common fractions.	Use concrete objects and visual models to add and subtract common fractions, fourths, thirds, halves, and eighths (with like denominators)		Unit 9	Virtual Manipulative; <a href="#">Fractions Adding</a> DK's I Love Math; Egypt Mighty Math Number Heroes; Fraction Fireworks

Mathematics Resource Map  
K-5

<b>GRADE THREE</b>																		
Strand: Patterns, Relations, and Algebra																		
<i>Students will engage in <b>problem solving, communicating, reasoning, connecting and representing</b> as they:</i>																		
State Standard		Student Expectations		TB	SFAW	Software												
3.P.1	Create, describe, extend, and explain symbolic (geometric) and numeric patterns, including multiplication patterns like 3, 30, 300, 3000, ....	Create, describe, extend, and explain visual (geometric) and numeric patterns, including multiplication patterns up to 1000. (i.e., 21, 28, 35, ____, ____,)	Unit 9	Units 1, 2, 5, 6, 11	Mighty Math Number Heroes; Quizzo Virtual Manipulative; <a href="#">Number Patterns</a> , <a href="#">Color Patterns</a> , <a href="#">Attribute Block Trains</a> Cornerstone Level A; Lesson 7 Using Addition and Subtraction <a href="#">MassLearns.com</a>													
3.P.2	Use symbol and letter variables (e.g., □, x) to represent unknowns or quantities that vary in expressions and in equations or inequalities (mathematical sentences that use =, <, >).	Use symbol and letter variables (e.g., □, x) to represent unknowns or quantities that vary in expressions and in equations or inequalities (mathematical sentences that use =, <, >) (up to 1,000).			<a href="#">Virtual Manipulative</a> Cornerstone Level B; Lesson 8 Using Whole Numbers <a href="#">MassLearns.com</a>													
3.P.3	Determine values of variables in simple equations (e.g., $4106 - \nabla = 37$ ; $5 = \bigcirc + 3$ and $\square - \bigcirc = 3$ ).	Determine values of variables in simple equations (e.g., $106 - \nabla = 37$ ; $5 = \bigcirc + 3$ and $\square - \bigcirc = 3$ ) up to 1,000.			Cornerstone Level B; Lesson 8 Using Whole Numbers <a href="#">MassLearns.com</a>													
3.P.4	Use pictures, models, tables, charts, graphs, words, number sentences, and mathematical notations to interpret mathematical relationships.	Use pictures, models, tables, charts, graphs, picture bar, words, number sentences, and mathematical notations to interpret mathematical relationships. (e.g. A jellyroll is cut into 6 equal pieces. Emma ate $\frac{1}{2}$ of a jellyroll. Pete ate $\frac{2}{3}$ of a jellyroll. Use fraction strips to compare fractions and determine who ate more jellyroll).	Unit 19	Units 1, 3, 5, 6, 7, 8, 10, 11	Cornerstone Level A; Lessons 2,4, 5 Working with Data <a href="#">Illuminations</a> <a href="#">Virtual Manipulative</a> <a href="#">MassLearns.com</a>													
3.P.5	Solve problems involving proportional relationships, including unit pricing (e.g., four apples cost 80¢, so one apple costs 20¢) and map interpretation (e.g., one inch represents five miles, so two inches represent ten miles).	Introduce solving problems which involve simple proportional relationships, including unit pricing (e.g., four apples cost 0.80, so one apple costs 0.20) and map interpretation (e.g., one inch represents five miles, so two inches represent ten miles).		Units 3, 5	Mighty Math Calculating Crew; Superhero Superstore <a href="#">Virtual Manipulative</a> <a href="#">Illuminations</a> <a href="#">MassLearns.com</a>													
3.P.6	Determine how change in one variable relates to a change in a second variable (e.g., input-output tables).	Determine how change in one variable relates to a change in a second variable (e.g., simple input-output tables <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th style="padding: 2px;">Input</th> <th style="padding: 2px;">Output</th> </tr> </thead> <tbody> <tr> <td style="padding: 2px;">4</td> <td style="padding: 2px;">20</td> </tr> <tr> <td style="padding: 2px;">5</td> <td style="padding: 2px;">?</td> </tr> <tr> <td style="padding: 2px;">6</td> <td style="padding: 2px;">30</td> </tr> <tr> <td style="padding: 2px;">7</td> <td style="padding: 2px;">?</td> </tr> <tr> <td style="padding: 2px;">8</td> <td style="padding: 2px;">40</td> </tr> </tbody> </table>	Input	Output	4	20	5	?	6	30	7	?	8	40		Units 2, 6, 10	<a href="#">Virtual Manipulative</a> <a href="#">MassLearns.com</a>	
Input	Output																	
4	20																	
5	?																	
6	30																	
7	?																	
8	40																	

Mathematics Resource Map  
K-5

<b>GRADE THREE</b>					
Strand: Geometry					
<i>Students will engage in <b>problem solving, communicating, reasoning, connecting and representing</b> as they:</i>					
State Standard	Student Expectations	TB	SFAW	Software	
3.G.1	Compare and analyze attributes and other features (e.g., number of sides, faces, corners, right angles, diagonals, and symmetry) of two- and three-dimensional geometric shapes.	Compare and analyze attributes and other features of two dimensional shapes (e.g., number of sides, symmetry, types of angles, and diagonals) and of three-dimensional geometric shapes (e.g. faces, corners, and number of faces).	Units 12, 18	Unit 8	Virtual Manipulatives; <a href="#">Attribute Blocks</a> , <a href="#">Platonic Solids</a> , <a href="#">Space Blocks</a> DK's I Love Math Greece Mighty Math Calculating Crew; Dr. Gee's 3D Lab Mighty Math Zoo Zillions; GeoComputer <a href="#">MassLearns.com</a> <a href="#">Illuminations</a>
3.G.2	Describe, model, draw, compare, and classify two- and three-dimensional shapes, e.g., circles, polygons—especially triangles and quadrilaterals—cubes, spheres, and pyramids.	Describe, model, draw, compare, and classify two- and three-dimensional shapes, e.g., circles, triangles, squares, cubes, spheres, and pyramids	Units 12, 18	Unit 8	Virtual Manipulatives; <a href="#">Attribute Blocks</a> , <a href="#">Platonic Solids</a> , <a href="#">Space Blocks</a> Mighty Math Number Heroes; GeoComputer <a href="#">MassLearns.com</a> <a href="#">Geometry</a> <a href="#">Illuminations</a>
3.G.3	Recognize similar figures.	Recognize similar figures.			Mighty Math Number Heroes; GeoComputer Virutal Manipulatives; <a href="#">Congruent Triangles</a> , <a href="#">Attribute Blocks</a> , <a href="#">Platonic Solids</a> , <a href="#">Space Blocks</a> DK's I Love Math Aztec
<b>3.G.4</b>	Identify angles as acute, right, or obtuse.	Identify angles as right angles, less than a right angle and greater than a right angle.		Unit 8	DK's I Love Math Aztec Virtual Manipulatives; <a href="#">Geoboard Coordinate</a> , <a href="#">Attribute Blocks</a> , <a href="#">Pattern Blocks</a> Mighty Math Number Heroes
<b>3.G.5</b>	Describe and draw intersecting, parallel, and perpendicular lines.	Describe and draw parallel, intersecting, and perpendicular lines.		Unit 8	DK's I Love Math Aztec Mighty Math Number Heroes; GeoComputer
3.G.6	Using ordered pairs of numbers and/or letters, graph, locate, and identify points, and describe paths (first quadrant).	Using ordered pairs of positive whole numbers and/or letters, graph, locate, and identify points (first quadrant). See Math Frameworks, Nov. 2000, p. 41.		Unit 4	Mighty Math Number Heroes GraphMaster DK's I Love Math Challenges
3.G.7	Describe and apply techniques such as reflections (flips), rotations (turns), and translations (slides) for determining if two shapes are congruent.	Describe and apply techniques such as reflections (flips), rotations (turns), and translations (slides) for determining if two shapes are congruent.	Unit 12	Unit 8	Virtual Manipulatives; Transformations: <a href="#">Dilation</a> , <a href="#">Reflection</a> , <a href="#">Rotation</a> , <a href="#">Translation</a> DK's I Love Math Aztec Mighty Math Number Heroes; GeoComputer Cornerstone <a href="#">MassLearns.com</a>
<b>3.G.8</b>	Identify and describe line symmetry in two-dimensional shapes.	Identify and describe line symmetry in two-dimensional shapes.	Unit 12	Unit 8	Mighty Math Number Heroes ;GeoComputer DK's I love Math Aztec <a href="#">MassLearns.com</a>
<b>3.G.9</b>	Predict and validate the results of partitioning, folding, and combining two- and three-dimensional shapes.	Predict and validate the results of partitioning (breaking apart), folding, and combining two- - dimensional shapes.		Unit 9	DK's I Love Math Aztec

Mathematics Resource Map  
K-5

<b>GRADE THREE</b>						
Strand: Measurement						
<i>Students will engage in <b>problem solving, communicating, reasoning, connecting and representing</b> as they:</i>						
State Standard	Student Expectations	TB	SFAW	Software		
3.M.1	Demonstrate an understanding of such attributes as length, area, weight, and volume, and select the appropriate type of unit for measuring each attribute.	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 US Customary (English) and metric systems including: centimeters, meters, inches, feet, yards, miles, pints, quarts, gallons, liters, and pounds.	Unit 16	Units 9, 10, 12	DK's I Love Math Greece <a href="http://MassLearns.com">MassLearns.com</a>	
3.M.2	Carry out simple unit conversions within a system of measurement (e.g., hours to minutes, cents to dollars, yards to feet or inches, etc.).	Carry out simple unit conversions within a system of measurement (e.g., hours to minutes, cents to dollars, yards to feet or inches, centimeters to meters etc.).	Unit 8	Units 4, 9, 12	DK's I Love Math Greece <a href="http://MassLearns.com">MassLearns.com</a>	
3.M.3	Identify time to the minute on analog and digital clocks using a.m. and p.m. Compute elapsed time using a clock (e.g., hours and minutes since ...) and using a calendar (e.g., days since ...).	Identify time to the minute on analog and digital clocks using a.m. and p.m. Compute elapsed time using a clock (e.g., hours and minutes since ...) and using a calendar (e.g., days since ...).	Units 4, 14	Units 4, 7, 11	DK's I Love Math Greece <a href="http://MassLearns.com">MassLearns.com</a>	
3.M.4	Estimate and find area and perimeter of a rectangle, triangle, or irregular shape using diagrams, models, and grids or by measuring.	Estimate and find area and perimeter of a rectangle, using diagrams, models, and grids or by measuring.	Units 4, 14, 18	Unit 8	Mighty Math Number Heroes; GeoComputer Virtual Manipulatives; <a href="http://Geoboard">Geoboard</a> <a href="http://MassLearns.com">MassLearns.com</a>	
3.M.5	Identify and use appropriate metric and English units and tools (e.g., ruler, angle, ruler, graduated cylinder, thermometer) to estimate, measure, and solve problems involving length, area, volume, weight, time, angle size, and temperature.	Identify and use appropriate metric and US Customary (English) units and tools (e.g., ruler, grids, scales, graduated cylinder, clock, thermometer) to estimate, measure, and solve problems involving length, area, weight, capacity/volume, time, and temperature.	Units 8, 9, 10, 15, 16		DK's I Love Math Greece Cornerstone Level A; Lesson 4 Understanding Numbers <a href="http://MassLearns.com">MassLearns.com</a>	

Mathematics Resource Map  
K-5

<b>GRADE THREE</b>					
Strand: Data Analysis, Statistics, Probability					
<i>Students will engage in <b>problem solving, communicating, reasoning, connecting and representing</b> as they:</i>					
State Standard		Student Expectations	TB	SFAW	Software
3.D.1	Collect and organize data using observations, measurements, surveys, or experiments, and identify appropriate ways to display the data.	Collect and organize data using observations, measurements, surveys or experiments to draw simple bar graphs, line graphs, and pictographs, and to compare and explain what is recorded.	Units 1,2,5,10,20		Mighty Math Number Heroes; Probability DK's I Love Math Challenges <a href="http://MassLearns.com">MassLearns.com</a> Cornerstone Level A; Lessons 1,2,3,4,5 Working With Data
3.D.2	Match representations of a data set such as lists, tables, or graphs (including circle graphs) with the actual set of data.	Match representations of a data set such as lists, tables, or graphs with the actual set of data.			Mighty Math Number Heroes; Probability DK's I Love Math Challenges <a href="http://MassLearns.com">MassLearns.com</a> Cornerstone Level A; Lessons 1,2,3,4,5 Working With Data
3.D.3	Construct, draw conclusions, and make predictions from various representations of data sets, including tables, bar graphs, pictographs, line graphs, line plots, and tallies.	Construct, draw conclusions, and make predictions from various representations of data sets, including tables, bar graphs, pictographs, line plots, and tallies.	Units 7,9	Units 1, 4, 9, 10, 11, 12	Mighty Math Number Heroes; Probability DK's I Love Math Challenges <a href="http://MassLearns.com">MassLearns.com</a> Cornerstone Level A; Lessons 1,2,3,4,5 Working With Data
3.D.4	Represent the possible outcomes for a simple probability situation (e.g., the probability of drawing a red marble from a bag containing three red marbles and four green marbles).	Tell the possible outcomes for a simple probability situation, (e.g., the probability of drawing a red marble from a bag containing three red marbles and four green marbles). See Math Frameworks, Nov. 2000, p. 57.		Unit 12	Mighty Math Number Heroes; Probability DK's I Love Math Challenges
3.D.5	List and count the number of possible combinations of objects from three sets (e.g., how many different outfits can one make from a set of three shirts, a set of two skirts, and a set of two hats?).	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 two shirts and three skirts?)			Mighty Math Number Heroes; Probability DK's I Love Math Challenges
3.D.6	Classify outcomes as certain, likely, unlikely, or impossible by designing and conducting experiments using concrete objects such as counters, number cubes, spinners, or coins.	Introduce classifying outcomes as certain, likely, unlikely, or impossible by designing and conducting experiments using concrete objects such as counters, number cubes, spinners, or coins.		Unit 12	Mighty Math Number Heroes; Probability Virtual manipulatives; <a href="#">Stick or Switch</a> , <a href="#">Coin Toss</a> , <a href="#">Coin Toss Heads in a Row</a>

Mathematics Resource Map  
K-5

<b>GRADE FOUR</b>					
<b>Strand: Number Sense and Operations</b>					
<i>Students will engage in <b>problem solving, communicating, reasoning, connecting and representing</b> as they</i>					
State Standard		Student Expectations	TB	SFAW	Software
4.N.1	Exhibit an understanding of the base ten number system by reading, modeling, writing, and interpreting whole numbers to at least 100,000; demonstrating an understanding of the values of the digits; and comparing and ordering the numbers.	Exhibit an understanding of the base ten number system by reading, modeling, writing, and interpreting whole numbers to at least 100,000,000; demonstrating an understanding of the values of the digits; and comparing and ordering the numbers.	Units 3,6	Units 1, 2, 3	Virtual manipulative- <a href="#">base blocks</a> Cornerstone Level A; Lessons 1, 2, 3 Understanding Numbers <a href="#">Masslearns.com</a> <a href="#">Illuminations-base ten blocks</a> DK's I Love Math Egypt
4.N.2	Represent, order, and compare large numbers (to at least 100,000) using various forms, including expanded notation, e.g., $853 = 8 \times 100 + 5 \times 10 + 3$ .	Represent, order, and compare large numbers (to at least 1,000,000) using various forms, including expanded notation, e.g., $853 = 8 \times 100 + 5 \times 10 + 3$ .	Units 3,6	Units 1, 7, 10	Mighty Math Carnival Countdown; Bubble Band, Giggle Factory <a href="#">Masslearns.com</a> Virtual Manipulative; <a href="#">Base Blocks</a> Cornerstone Level A; Lesson 3 Understanding Numbers DK's I Love Math Egypt
4.N.3	Demonstrate an understanding of fractions as parts of unit wholes, as parts of a collection, and as locations on the number line.	Demonstrate an understanding of fractions as parts of unit wholes, as parts of a collection, and as locations on the number line. Measure on a ruler to the nearest $\frac{1}{8}$ inch	Units 12, 13, 14	Units 9, 10	<a href="#">Illuminations-Tour of Fractions, No Matter What Shape Your Fractions Are In, Fraction Games</a> Edmark's Mighty Math Number Heroes; Fraction Fireworks Might Math Calculating Crew; Nautical Number Line Cornerstone Level A; Lesson 1 Using Decimals and Fractions <a href="#">Masslearns.com</a> Virtual Manipulative- <a href="#">Fractions Parts of a Whole, Fractions Visualizing</a>
4.N.4	Select, use, and explain models to relate common fractions and mixed numbers ( $\frac{1}{2}$ , $\frac{1}{3}$ , $\frac{1}{4}$ , $\frac{1}{6}$ , $\frac{1}{8}$ , $\frac{1}{12}$ , and $1\frac{1}{2}$ ), find equivalent fractions, mixed numbers, and decimals, and order fractions.	Select, use, and explain models to relate common fractions and mixed numbers to twelfths, find equivalent fractions, mixed numbers, and decimals, and order fractions. Compare and order fractions and mixed numbers with like denominators up to twelfths. Represent mixed numbers as improper fractions and vice versa.	Units 10, 12	Units 9, 10, 11	<a href="#">Illuminations-Fraction Games, Fraction City, Hungry For Math Fraction Card Game</a> Edmark's Mighty Math Calculating Crew; Nautical Number Line Virtual Manipulative- <a href="#">Fractions Parts of a Whole, Fractions Equivalent, Fractions Comparing</a> Timeliner
4.N.5	Identify and generate equivalent forms of common decimals and fractions less than one whole (halves, quarters, fifths, and tenths).	Identify and generate equivalent forms of common decimals and fractions less than one whole (halves, quarters, fifths, and tenths).	Unit 10	Unit 11	<a href="#">Illuminations-Decimals, Fractions and Percents</a> <a href="#">Masslearns.com</a> <a href="#">Number Sense and Operations</a> Virtual Manipulative- <a href="#">Base Blocks Decimals, Fractions Parts of a Whole, Fractions Equivalent</a> DK's I Love Math Egypt, Atlantis
4.N.6	Exhibit an understanding of the base ten number system by reading, naming, and writing decimals between 0 and 1 up to the hundredths.	Exhibit an understanding of the base ten number system by reading, naming, and writing decimals between 0 and 1 up to the hundredths.	Unit 10	Unit 1	Virtual manipulative- <a href="#">base blocks</a> Cornerstone Level A; Lessons 1, 2, 3 Understanding Numbers <a href="#">Masslearns.com</a> <a href="#">Number Sense and Operations</a> <a href="#">Illuminations-base ten blocks</a> DK's I Love Math Egypt

## Mathematics Resource Map K-5

4.N.7	Recognize classes (in particular, odds, evens; factors or multiples of a given number; and squares) to which a number may belong, and identify the numbers in those classes. Use these in the solution of problems.	Recognize classes (in particular, odds, evens; factors or multiples of a given number; and squares) to which a number may belong, and identify the numbers in those classes. Use these in the solution of problems. Find common multiples and common factors for sets of numbers. Make predictions about the solutions to problems using an understanding of the classes of numbers (e.g. even x even)	Units 4, 7, 13	Units 3, 9	Mighty Math Zoo Zillions; Annie's Jungle Trail Figures This! ( <a href="http://www.figurethis.org">www.figurethis.org</a> ) <a href="http://Masslearns.com">Masslearns.com</a> Virtual Manipulative <a href="#">Base Blocks</a>
4.N.8	Select, use, and explain various meanings and models of multiplication and division of whole numbers. Understand and use the inverse relationship between the two operations.	Select, use, and explain various meanings and models of multiplication and division of whole numbers. Understand and use the inverse relationship between the two operations (i.e. division with a multiplication check). Model and describe multiplication as repeated addition. Model and describe division as repeated subtraction.	Units 4, 5, 6, 13	Units 3, 5, 6	Virtual Manipulative- <a href="#">Base Blocks</a> , <a href="#">Base Blocks Addition</a> , <a href="#">Base Blocks Subtraction</a> Edmark's Mighty Math Calculating Crew; Nick Knack Supertrader Edmark's Mighty Math Number Heroes; Quizzo Illuminations- <a href="#">Multiplication: An Adventure in Number Sense</a> <a href="http://Masslearns.com">Masslearns.com</a>
4.N.9	Select, use, and explain the commutative, associative, and identify properties of operations on whole numbers in problem situations (e.g., $37 \times 46 = 46 \times 37$ , $[5 \times 7] \times 2 = 5 \times [7 \times 2]$ ).	Select, use, and explain the commutative, associative, and identify properties of operations on whole numbers in problem situations (e.g., $37 \times 46 = 46 \times 37$ , $[5 \times 7] \times 2 = 5 \times [7 \times 2]$ ).	Units 4, 7	Units 2, 5	<a href="http://Masslearns.com">Masslearns.com</a>
4.N.10	Select and use appropriate operations (addition, subtraction, multiplication, and division) to solve problems, including those involving money.	Select and use appropriate operations (addition, subtraction, multiplication, and division) to solve problems, including those involving money.	Units 7, 8, 9, 11	Units 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 12	<a href="#">Illuminations</a> Cornerstone Level A; Lesson 3, Using Decimals and Fractions Edmark's Mighty Math Carnival Countdown; Carnival Cars Edmark's Zoo Zillions; Fish Stories; Gnu Ewe Boutique Edmark's Calculating Crew; Superhero Superstore <a href="http://Masslearns.com">Masslearns.com</a>
4.N.11	Know multiplication facts through $12 \times 12$ and related division facts. Use these facts to solve related multiplication problems and compute related problems (e.g., $3 \times 5$ is related to $30 \times 50$ , $300 \times 5$ , and $30 \times 500$ ).	Know multiplication facts through $12 \times 12$ and related division facts. Use these facts to solve related multiplication problems and compute related problems (e.g., $3 \times 5$ is related to $30 \times 50$ , $300 \times 5$ , and $30 \times 500$ ).	Units 3, 8, 10, 11, 12, 13, 14, 16	Units 3, 5, 6, 7, 12	Mighty Math Calculating Crew; Nautical Number Line; Nick Knack Supertrader Mighty Math Number Heroes; Quizzo <a href="http://MassLearns.com">MassLearns.com</a> DK's I Love Math Egypt
4.N.12	Add and subtract (up to five-digit numbers) and multiply (up to three digits by two digits) accurately and efficiently.	Add and subtract (up to five-digit numbers) and multiply (up to three digits by two digits) accurately and efficiently.	Units 1, 2, 3, 8, 11	Units 2, 5, 6, 7	Might Math Number Heroes; Quizzo Edmark's Carnival Countdown; Bubble Band Edmark's Mighty Math Calculating Crew; Nautical Number Line; Nick Knack Supertrader <a href="http://MassLearns.com">MassLearns.com</a> Cornerstone Level A; Lessons 5,6 Using + and -

## Mathematics Resource Map K-5

4.N.13	Divide up to a three-digit whole number with a single-digit divisor (with or without remainders) accurately and efficiently. Interpret any remainders.	Divide up to a three-digit whole number with a single-digit divisor (with or without remainders) accurately and efficiently. Interpret any remainders as fractions. Introduce using two-digit divisors	Unit 17	Unit 7	Cornerstone Level A; Lesson 2 Using Multiplication and Division DK's I Love Math Egypt <a href="http://MassLearns.com">MassLearns.com</a>
4.N.14	Demonstrate in the classroom an understanding of and the ability to use the conventional algorithms for addition and subtraction (up to five-digit numbers), and multiplication (up to three digits by two digits).	Demonstrate in the classroom an understanding of and the ability to use the conventional algorithms for addition and subtraction (up to five-digit numbers), and multiplication (up to three digits by two digits).	Unit 8	Units 2, 5, 6	Virtual Manipulate- <a href="#">Base Blocks</a> Mighty Math Calculating Crew; Nautical Number Line; Nick Knack Supertrader Mighty Math Number Heroes; Quizzo
4.N.15	Demonstrate in the classroom an understanding of and the ability to use the conventional algorithm for division of up to a three-digit whole number with a single-digit divisor (with or without remainders).	Demonstrate in the classroom an understanding of and the ability to use the conventional algorithm for division of up to a three-digit whole number with a single-digit divisor (with or without remainders). Introduce division of a 3-digit dividend with a two-digit divisor	Unit 8	Unit 7	Virtual Manipulate- <a href="#">Base Blocks</a> Mighty Math Calculating Crew; Nautical Number Line; Nick Knack Supertrader Mighty Math Number Heroes; Quizzo <a href="http://MassLearns.com">MassLearns.com</a> Cornerstone Level A; Lesson 2 Using Multiplication and Division
4.N.16	Round whole numbers through 100,000 to the nearest 10, 100, 1,000, 10,000, and 100,000.	Round whole numbers through 100,000 to the nearest 10, 100, 1,000, 10,000, and 100,000.	Units 3, 6, 7	Unit 1	Mighty Math Calculating Crew; Nautical Number Line <a href="http://Masslearns.com">Masslearns.com</a> Cornerstone Level A; Lesson 4 Using Multiplication and Division
4.N.17	Select and use a variety of strategies (e.g., front-end, rounding, and regrouping) to estimate quantities, measures, and the results of whole-number computations up to three-digit whole numbers and amounts of money to \$1000, and to judge the reasonableness of the answer.	Select and use a variety of strategies (e.g., front-end, rounding, and regrouping) to estimate quantities, measures, and the results of whole-number computations up to three-digit whole numbers and amounts of money to \$1000, and to judge the reasonableness of the answer.	Unit 12	Units 1, 2, 5, 6, 7, 8, 9, 10	Cornerstone Level A; Lesson 4 Using Multiplication and Division; Lesson 4 Using Addition and Subtraction Mighty Math Calculating Crew; Nautical Number Line; Superhero Superstore DK's I Love Math; Greece
4.N.18	Use concrete objects and visual models to add and subtract common fractions.	Use concrete objects and visual models to add and subtract common fractions Introduce representing answers in lowest terms.	Unit 6,7	Unit 10	Virtual Manipulative; <a href="#">Fractions Adding</a> DK's I Love Math; Egypt Mighty Math Number Heroes; Fraction Fireworks

Mathematics Resource Map  
K-5

<b>GRADE FOUR</b>					
<b>Strand: Patterns, Relations, and Algebra</b>					
<i>Students will engage in <b>problem solving, communicating, reasoning, connecting and representing</b> as they:</i>					
State Standard		Student Expectations	TB	SFAW	Software
4.P.1	Create, describe, extend, and explain symbolic (geometric) and numeric patterns, including multiplication patterns like 3, 30, 300, 3000, ....	Create, describe, extend, and explain symbolic (geometric) and numeric patterns, including multiplication patterns like 3, 30, 300, 3000, .... or 1, 4, 9, 16, 25, ____, ____	Units 1, 2, 5, 6, 8, 15	Units 1, 2, 3, 5, 6, 7, 8	Mighty Math Number Heroes; Quizzo Virtual Manipulative; <a href="#">Number Patterns</a> , <a href="#">Color Patterns</a> , <a href="#">Attribute Block Trains</a> Cornerstone Level A; Lesson 7 Using Addition and Subtraction <a href="#">MassLearns.com</a>
4.P.2	Use symbol and letter variables (e.g., □, x) to represent unknowns or quantities that vary in expressions and in equations or inequalities (mathematical sentences that use =, <, >).	Use symbol and letter variables (e.g., □, x) to represent unknowns or quantities that vary in expressions and in equations or inequalities (mathematical sentences that use =, <, >).	Units 5, 7, 11	Units 3, 12	Virtual Manipulative Cornerstone Level B; Lesson 8 Using Whole Numbers <a href="#">MassLearns.com</a>
4.P.3	Determine values of variables in simple equations (e.g., $4106 - \nabla = 37$ ; $5 = \bigcirc + 3$ and $\square - \bigcirc = 3$ ).	Determine values of variables in simple equations (e.g., $4106 - \nabla = 37$ ; $5 = \bigcirc + 3$ and $\square - \bigcirc = 3$ ) up to 100,000.	Units 5, 7, 11, 13	Unit 3	Cornerstone Level B; Lesson 8 Using Whole Numbers <a href="#">MassLearns.com</a>
4.P.4	Use pictures, models, tables, charts, graphs, words, number sentences, and mathematical notations to interpret mathematical relationships.	Use pictures, models, tables, charts, graphs, bar line, circle, words, number sentences, and mathematical notations to interpret mathematical relationships.	Unit 15	Units 2, 3, 6, 7, 12	Cornerstone Level A; Lessons 2,4, 5 Working with Data Illuminations Virtual Manipulative <a href="#">MassLearns.com</a>
4.P.5	Solve problems involving proportional relationships, including unit pricing (e.g., four apples cost 80¢, so one apple costs 20¢) and map interpretation (e.g., one inch represents five miles, so two inches represent ten miles).	Solve problems involving proportional relationships, including unit pricing (e.g., five apples cost 0.80, so one apple costs 0.16) and map interpretation (e.g., one inch represents five miles, so ½ inch represent 2 ½ miles).		Unit 3	Mighty Math Calculating Crew; Superhero Superstore Virtual Manipulatives Illuminations <a href="#">MassLearns.com</a>
4.P.6	Determine how change in one variable relates to a change in a second variable (e.g., input-output tables).	Determine how change in one variable relates to a change in a second variable (e.g., input-output tables). (i.e. in $\begin{matrix} 7 & 10 & 12 \\ (n) \\ \text{out } 3 & 6 & 8 \end{matrix}$ (n-4) Introduce specific vocabulary (e.g. variable, input, output)	15	Unit 3	Virtual Manipulatives <a href="#">MassLearns.com</a>

Mathematics Resource Map  
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<b>GRADE FOUR</b>					
<b>Strand: Geometry</b>					
<i>Students will engage in <b>problem solving, communicating, reasoning, connecting</b> and <b>representing</b> as they:</i>					
State Standard		Student Expectations	TB	SFAW	Software
4.G.1	Compare and analyze attributes and other features (e.g., number of sides, faces, corners, right angles, diagonals, and symmetry) of two- and three-dimensional geometric shapes.	Compare and analyze attributes and other features (e.g., number of sides, faces, corners, right angles, diagonals, and symmetry) of two- and three-dimensional shapes.	Unit 2	Unit 8	Virtual Manipulatives; <a href="#">Attribute Blocks</a> , <a href="#">Platonic Solids</a> , <a href="#">Space Blocks</a> DK's I Love Math Greece Mighty Math Calculating Crew; Dr. Gee's 3D Lab Mighty Math Zoo Zillions; GeoComputer <a href="#">MassLearns.com</a> <a href="#">Illuminations</a>
4.G.2	Describe, model, draw, compare, and classify two- and three-dimensional shapes, e.g., circles, polygons—especially triangles and quadrilaterals—cubes, spheres, and pyramids.	Describe, model, draw, compare, and classify two- and three-dimensional shapes (e.g., circles, polygons—especially triangles and quadrilaterals—cubes, spheres, and pyramids).	Unit 9	Unit 8	Virtual Manipulatives; <a href="#">Attribute Blocks</a> , <a href="#">Platonic Solids</a> , <a href="#">Space Blocks</a> Mighty Math Number Heroes; GeoComputer <a href="#">MassLearns.com</a> <a href="#">Illuminations</a>
4.G.3	Recognize similar figures.	Recognize similar figures. Describe what makes them similar.	Unit 2	Unit 8	Mighty Math Number Heroes; GeoComputer Virtual Manipulatives; <a href="#">Congruent Triangles</a> , <a href="#">Attribute Blocks</a> , <a href="#">Platonic Solids</a> , <a href="#">Space Blocks</a> DK's I Love Math Aztec
4.G.4	Identify angles as acute, right, or obtuse.	Identify angles as acute, right, or obtuse.		Unit 8	DK's I Love Math Aztec Virtual Manipulatives; <a href="#">Geoboard Coordinate</a> , <a href="#">Attribute Blocks</a> , <a href="#">Pattern Blocks</a> Mighty Math Number Heroes
4.G.5	Describe and draw intersecting, parallel, and perpendicular lines.	Describe and draw intersecting, parallel, and perpendicular lines.	Unit 9	Unit 8	DK's I Love Math Aztec Mighty Math Number Heroes; GeoComputer
4.G.6	Using ordered pairs of numbers and/or letters, graph, locate, and identify points, and describe paths (first quadrant).	Using ordered pairs of numbers and/or letters, graph, locate, and identify points, and describe paths (first quadrant). See Math Frameworks, Nov. 2000, p. 41.	Units 1, 8, 10	Unit 4	Mighty Math Number Heroes GraphMaster DK's I Love Math Challenges
4.G.7	Describe and apply techniques such as reflections (flips), rotations (turns), and translations (slides) for determining if two shapes are congruent.	Describe and apply techniques such as reflections (flips), rotations (turns), and translations (slides) for determining if two shapes are congruent. Use these terms correctly.	Unit 9	Unit 8	Virtual Manipulatives; Transformations: <a href="#">Dilation</a> , <a href="#">Reflection</a> , <a href="#">Rotation</a> , <a href="#">Translation</a> DK's I Love Math Aztec Mighty Math Number Heroes; GeoComputer Cornerstone <a href="#">MassLearns.com</a>
4.G.8	Identify and describe line symmetry in two-dimensional shapes.	Identify and describe line symmetry in two-dimensional shapes.	Unit 9	Unit 8	Virtual Manipulatives; <a href="#">Attribute Blocks</a> , <a href="#">Platonic Solids</a> , <a href="#">Space Blocks</a> DK's I Love Math Greece Mighty Math Calculating Crew; Dr. Gee's 3D Lab Mighty Math Zoo Zillions; GeoComputer <a href="#">MassLearns.com</a> <a href="#">Illuminations</a>
4.G.9	Predict and validate the results of partitioning, folding, and combining two- and three-dimensional shapes.	Predict and validate the results of partitioning, folding, and combining two- and three-dimensional shapes.	Unit 9	Unit 8	Virtual Manipulatives; <a href="#">Attribute Blocks</a> , <a href="#">Platonic Solids</a> , <a href="#">Space Blocks</a> Mighty Math Number Heroes; GeoComputer <a href="#">MassLearns.com</a> ; <a href="#">Illuminations</a>

Mathematics Resource Map  
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<b>GRADE FOUR</b>					
<b>Strand: Measurement</b>					
<i>Students will engage in <b>problem solving, communicating, reasoning, connecting</b> and <b>representing</b> as they:</i>					
State Standard		Student Expectations	TB	SFAW	Software
4.M.1	Demonstrate an understanding of such attributes as length, area, weight, and volume, and select the appropriate type of unit for measuring each attribute.	Demonstrate an understanding of such attributes as length, area, weight, and volume, and select the appropriate type of unit for measuring each attribute.	Units 1, 5, 8, 10	Unit 10	DK's I Love Math Greece <a href="http://MassLearns.com">MassLearns.com</a>
4.M.2	Carry out simple unit conversions within a system of measurement (e.g., hours to minutes, cents to dollars, yards to feet or inches, etc.).	Carry out simple unit conversions within a system of measurement (e.g., hours to minutes, cents to dollars, yards to feet or inches, etc.).	Unit 10	Units 4, 9	DK's I Love Math Greece <a href="http://MassLearns.com">MassLearns.com</a>
4.M.3	Identify time to the minute on analog and digital clocks using a.m. and p.m. Compute elapsed time using a clock (e.g., hours and minutes since ...) and using a calendar (e.g., days since ...).	Identify time to the minute on analog and digital clocks using a.m. and p.m. Compute elapsed time using a clock (e.g., hours and minutes since ...) and using a calendar (e.g., days since ...) correctly use a.m. and p.m.	DAB 47, 113 (telling) DAB 113, 214 (elapsed)	Units 3, 4	DK's I Love Math Greece <a href="http://MassLearns.com">MassLearns.com</a>
4.M.4	Estimate and find area and perimeter of a rectangle, triangle, or irregular shape using diagrams, models, and grids or by measuring.	Estimate and find area and perimeter of a rectangle, triangle, or irregular shape using diagrams, models, and grids or by measuring.	Unit 2	Unit 8	Mighty Math Number Heroes; GeoComputer Virtual Manipulatives; <a href="http://Geoboard">Geoboard</a> <a href="http://MassLearns.com">MassLearns.com</a>
4.M.5	Identify and use appropriate metric and English units and tools (e.g., ruler, angle, ruler, graduated cylinder, thermometer) to estimate, measure, and solve problems involving length, area, volume, weight, time, angle size, and temperature.	Identify and use appropriate metric and English units and tools (e.g., ruler, scales, compass, graduated cylinder, thermometer) to estimate, measure, and solve problems involving length, area, volume, weight, time, angle size, and temperature.	Units 8, 9, 15	Units 4, 10, 11	DK's I Love Math Greece Cornerstone Level A; Lesson 4 Understanding Numbers <a href="http://MassLearns.com">MassLearns.com</a>

Mathematics Resource Map  
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<b>GRADE FOUR</b>					
<b>Strand: Data Analysis, Statistics, Probability</b>					
<i>Students will engage in <b>problem solving, communicating, reasoning, connecting and representing</b> as they:</i>					
State Standard		Student Expectations	TB	SAFW	Software
4.D.1	Collect and organize data using observations, measurements, surveys, or experiments, and identify appropriate ways to display the data.	Collect and organize data using observations, measurements, surveys, or experiments, and identify appropriate ways to display the data.	Units 1, 2, 5, 13, 14, 15, 16	Unit 4	Mighty Math Number Heroes; Probability DK's I Love Math Challenges <a href="http://MassLearns.com">MassLearns.com</a> Cornerstone Level A; Lessons 1,2,3,4,5 Working With Data
4.D.2	Match representations of a data set such as lists, tables, or graphs (including circle graphs) with the actual set of data.	Match representations of a data set such as lists, tables, or graphs (including circle graphs) with the actual set of data.	Unit 15	Unit 4	Mighty Math Number Heroes; Probability DK's I Love Math Challenges <a href="http://MassLearns.com">MassLearns.com</a> Cornerstone Level A; Lessons 1,2,3,4,5 Working With Data
4.D.3	Construct, draw conclusions, and make predictions from various representations of data sets, including tables, bar graphs, pictographs, line graphs, line plots, and tallies.	Construct, draw conclusions, and make predictions from various representations of data sets, including tables, bar graphs, pictographs, line graphs, line plots, and tallies.	Units 1, 2, 5, 15, 16	Units 4, 11	Mighty Math Number Heroes; Probability DK's I Love Math Challenges <a href="http://MassLearns.com">MassLearns.com</a> Cornerstone Level A; Lessons 1,2,3,4,5 Working With Data
4.D.4	Represent the possible outcomes for a simple probability situation (e.g., the probability of drawing a red marble from a bag containing three red marbles and four green marbles).	Represent the possible outcomes for a simple probability situation (e.g., the probability of drawing a red marble from a bag containing three red marbles and four green marbles). See Math Frameworks, Nov. 2000, p. 57. Represent the outcome as a ratio, i.e. $\frac{3}{4}$ )	Unit 14	Unit 12	Mighty Math Number Heroes; Probability DK's I Love Math Challenges
4.D.5	List and count the number of possible combinations of objects from three sets (e.g., how many different outfits can one make from a set of three shirts, a set of two skirts, and a set of two hats?).	List and count the number of possible combinations of objects from three sets (e.g., how many different outfits can one make from a set of three shirts, a set of two skirts, and a set of two hats?).	Unit 14	Unit 12	Mighty Math Number Heroes; Probability DK's I Love Math Challenges
4.D.6	Classify outcomes as certain, likely, unlikely, or impossible by designing and conducting experiments using concrete objects such as counters, number cubes, spinners, or coins.	Classify outcomes as certain, likely, unlikely, or impossible by designing and conducting experiments using concrete objects such as counters, number cubes, spinners, or coins.	Units DAB 103- 105 SG 120-124	Unit 12	Mighty Math Number Heroes; Probability DK's I Love Math Challenges <a href="http://MassLearns.com">MassLearns.com</a> Cornerstone Level A; Lessons 1,2,3,4,5 Working With Data

Mathematics Resource Map  
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<b>GRADE FIVE</b>					
<b>Strand: Number Sense and Operations</b>					
<i>Students will engage in <b>problem solving, communicating, reasoning, connecting</b> and <b>representing</b> as they:</i>					
State Standard		Student Expectations	TB	SFAW	Software
5.N.1	Demonstrate an understanding of positive integer exponents.	Demonstrate an understanding of powers of ten up to $10^6$ .	Unit 2	Lesson 3-11	<a href="http://MassLearns.com">MassLearns.com</a> DK'S I Love Math Egypt
5.N.2	Demonstrate an understanding of place value to billions and thousandths.	Demonstrate an understanding of place value to billions and thousandths.	Units 2,5	Lessons 1-1, 3, 1-5	Cornerstone-Level B; Lessons 1,2 Understanding Numbers; DK's I Love Math Egypt
5.N.3	Represent and compare billions and thousandths positive numbers in various forms (e.g., expanded notation).	Compare and order decimals to the 1,000ths. Represent and compare billions. Represent whole numbers in expanded notation.	Unit 7, 11	Lessons 1-3 1-5 1-3	DK's I Love Math Egypt Edmark's Mighty Math Calculating Crew; Nautical Number Line Cornerstone-Level B; Lessons 2,3 Understanding Numbers; <a href="#">Virtual Manipulatives</a>
5.N.4	Demonstrate an understanding of fractions as a ratio of whole numbers, parts of a collection.	Demonstrate fractions as parts of a whole, a collection, or a set. Demonstrate fractions as ratios. Demonstrate fractions on a number line (including a ruler).	Unit 4	Lessons 7-11 11-8	Edmark's Mighty Math Calculating Crew; Nautical Number Line Edmark's Mighty Math Number Heroes; Fraction Fireworks Virtual Manipulatives; <a href="#">Fractions Pieces</a> , <a href="#">Fractions Equivalent</a> , <a href="#">Fractions Naming</a> , <a href="#">Fractions Parts of a Whole</a> , <a href="#">Fractions Visualizing</a> Cornerstone-Level B; Lesson 1
5.N.5	Identify and determine common equivalent fractions, mixed numbers, decimals, and percents.	Recognize commonly used fractions and their decimal equivalents. Recognize the relationship between percents and fractions with denominators up to 100%.	Unit 3	Lessons 7-13 11-8	DK's I Love Math Atlantis Cornerstone-Level B; Lesson 1 Using Fractions and Percents Virtual Manipulatives; <a href="#">Percentages</a> Edmark's Mighty Math Calculating Crew; Nautical Number Line; <a href="http://MassLearns.com">MassLearns.com</a>
5.N.6	Find and position integers, fractions, mixed numbers, and decimals.	Find and position positive integers, fractions, mixed numbers, and decimals on a number line or in an ordered list.	Units 7, 10	Lesson 7-13	TimeLiner Edmark's Might Math Calculating Crew; Nautical Number Line; <a href="http://MassLearns.com">MassLearns.com</a>
5.N.7	Compare and order integers (including negative integers), and positive fractions, mixed numbers, decimals, and percents.	Compare and order whole numbers, and positive fractions, mixed numbers, decimals, and percents.	Units 3, 5, 7	Lesson 12-5	TimeLiner Edmark's Might Math Calculating Crew; Nautical Number Line; <a href="http://MassLearns.com">MassLearns.com</a>
5.N.8	Apply number theory concepts—including prime and composite numbers, prime factorization, greatest common factor, least common multiple, and divisibility rules for 2, 3, 4, 5, 6, 9, and 10—to the solution of problems.	Apply number theory concepts by demonstrating an understanding that a number can be prime or composite that numbers can be factored by recognizing when one number is a multiple of another. by finding the greatest common factor and least common multiple for sets of numbers. by using the divisibility rules for 2,3,4, 5, 6, 9 and 10 to solve problems.	Units 5, 11	Lessons 3-1 8-3 7-9 3-10	DK'S I Love Math Egypt <a href="http://MassLearns.com">MassLearns.com</a>

## Mathematics Resource Map K-5

5.N.9	Select and use appropriate operations to solve problems involving addition, subtraction, multiplication, division, and positive integer exponents with whole numbers, and with positive fractions, mixed numbers, decimals, and percents.	Select the appropriate operations to solve problems. Determine if there is too little or too much information when solving problems. Model real-world problems using numbers other than whole numbers.	Units 4, 5, 7, 9, 12	Lessons 2-10-7-6 on going	Edmark's Mighty Math Calculating Crew; Nick Knack Supertrader Edmark's Might Math Number Heroes; Quizzo <a href="http://Masslearns.com">Masslearns.com</a>
5.N.10	Use the number line to model addition and subtraction of integers, <u>with the exception of subtracting negative integers.</u>	Use the number line to model positive and negative integers (as reading temperatures on a thermometer).	Unit 12	Lesson 12-6	Virtual Manipulatives; <a href="#">Number Line Arithmetic</a> , <a href="#">Number Line Bars</a> , <a href="#">Number Line Bounce</a> <a href="http://Masslearns.com">Masslearns.com</a> TimeLiner
5.N.11	Apply the Order of Operations for expressions involving addition, subtraction, multiplication, and division with grouping symbols (+, -, x, ÷).	Recognize and demonstrate that addition, subtraction, multiplication and division follow an Order of Operations and that parentheses can affect the order.	Unit 4	Lesson 3-13	<a href="http://MassLearns.com">MassLearns.com</a>
5.N.12	Demonstrate an understanding of the inverse relationship of addition and subtraction, and use that understanding to simplify computation and solve problems.	Demonstrate an understanding that addition and subtraction are inversely related. Demonstrate an understanding that multiplication and division are inversely related.	Unit 1	Lesson 1-13 3-1	Virtual Manipulatives; <a href="#">Base Blocks Addition</a> , <a href="#">Base Blocks Subtraction</a> , <a href="#">Color Chips Addition</a> , <a href="#">Color Chips Subtraction</a> <a href="http://MassLearns.com">MassLearns.com</a>
5.N.13	Accurately and efficiently add, subtract, multiply, and divide (with double-digit divisors) whole numbers and positive decimals.	Use algorithms to add and subtract whole and decimal numbers. Demonstrate understanding of multiplication and division of whole and decimals e.g. $156.24 \div 12$ . Use algorithms to perform division with two-digit divisors.	Units 2, 3, 4, 5, 6, 8, 9, 11, 12, 13	Lessons 4-2 1-12 2-9	Edmark's Mighty Math Calculating Crew; Nautical Number Line Edmark's Mighty Math Number Heroes; Fraction Fireworks Cornerstone Level B; Lessons 1, 2 Using Decimals; Virtual Manipulatives; <a href="#">Base Blocks Decimals</a> <a href="http://MassLearns.com">MassLearns.com</a>
5.N.14	Accurately and efficiently add, subtract, multiply, and divide positive fractions and mixed numbers. Simplify fractions.	Add, subtract and multiply positive fractions and mixed numbers. Simplify fractions	Unit 9	Lessons 8-1,2,3,4 8-5,6,7,8	Edmark's Mighty Math Number Heroes; Fraction Fireworks Virtual Manipulatives; <a href="#">Fractions Adding</a> Cornerstone Level B; Lessons 2,3 Using Fractions and Percents <a href="http://MassLearns.com">MassLearns.com</a>
5.N.15	Add and subtract integers, <u>with the exception of subtracting negative integers.</u>	Add and subtract integers using number line, with the exception of subtracting negative integers.			Edmark's Might Math Calculating Crew; Nautical Number Line Cornerstone Level B; Lessons 3, 4 Using Whole Numbers Virtual Manipulatives; <a href="#">Number Line Bounce</a> , <a href="#">Number Line Arithmetic</a> , <a href="#">Number Line Bars</a>
5.N.16		<i>Intentionally left blank</i>			
5.N.17	Estimate results of computations with whole numbers, and with positive fractions, mixed numbers, decimals, and percents. Describe reasonableness of estimates.	Estimate sums, differences, products, and quotients with whole numbers, fractions, and decimals with reasoned strategies.	Unit 2		<a href="http://MassLearns.com">MassLearns.com</a> Edmark's Mighty Math Calculating Crew; Nautical Number Line

Mathematics Resource Map  
K-5

<b>GRADE FIVE</b>					
<b>Strand: Patterns, Relations, and Algebra</b>					
<i>Students will engage in <b>problem solving, communicating, reasoning, connecting</b> and <b>representing</b> as they:</i>					
State Standard		Student Expectations	TB	SFAW	Software
5.P.1	Analyze and determine the rules for extending symbolic, arithmetic, and geometric patterns and progressions.	Write, understand and analyze symbolic, arithmetic, and geometric patterns.	Units 1, 2, 11	Lessons 1-5, 2-1, 2-7, 2-14; 3-2, 3-4; 4-1, 4-9	<a href="#">Illuminations</a> Virtual Manipulatives; <a href="#">Number Patterns</a> , <a href="#">Pattern Blocks</a> , <a href="#">Triominoes</a> , <a href="#">Attribute Blocks</a> , <a href="#">Attribute Trains</a> Edmark's Mighty Math Number Heroes; Quizzo; <a href="#">MassLearns.com</a> Cornerstone Level B; Lesson 9
5.P.2	Replace variables with given values and evaluate/simplify [e.g., $2(\bigcirc) + 3$ when $\bigcirc = 4$ ].	Find the "missing number" in a number sentence. Recognize and describe the concept of variable as the "missing number" in a number sentence.	Unit 4	Lesson 2-12	Virtual Manipulatives; <a href="#">Algebra Tiles</a> <a href="#">MassLearns.com</a>
5.P.3	Use the properties of equality to solve problems (e.g., if $\square + 7 = 13$ , then $\square = 13 - 7$ , therefore $\square = 6$ ; if $3 \times \square = 15$ , then $\frac{1}{3} \times 3 \times \square = \frac{1}{3} \times 15$ , therefore $\square = 5$ ).	Identify properties of equality and inverse relations with whole numbers in four operations.		Lessons 12-1 to 12-3	Virtual Manipulatives; <a href="#">Algebra Tiles</a> Edmark's Mighty Math Number Heroes; Quizzo
5.P.4	Represent real situations and mathematical relationships with concrete models, tables, graphs, and rules in words and with symbols (e.g., input-output tables).	Analyze and describe the data orally and in writing, commenting on patterns and trends. Organize data logically with a table, chart or other model.	Units 1, 3, 4, 14	Lessons 2-14; 3- 15; 11-5	Edmark's Mighty Math Number Heroes; Probability Cornerstone Level B; Lessons 1, 2, 3, 4 Working with Data; GraphClub Virtual Manipulatives; <a href="#">Histogram</a> , <a href="#">Bar Charts</a> ; <a href="#">MassLearns.com</a> ; <a href="#">Illuminations</a>
5.P.5	Solve linear equations using concrete models, tables, graphs, and paper-pencil methods.	Find the value of an expression given the replacement value for the variables (e.g., what is $7 - C$ if $C = 3.5$ ?). Solve equations in one variable using concrete objects and "guess and check." Write an equation or algebraic expression that shows the relationship between variables in a table, graph or word problem.	Units 14, 15	Lessons 2-15, 12- 2, 12-3, 12-10	Virtual Manipulatives; <a href="#">Algebra Tiles</a> <a href="#">MassLearns.com</a>
5.P.6	Produce and interpret graphs that represent the relationship between two variables in everyday situations.	Determine and express simple ratios. Create graphs using data from table of values (e.g. 2 dimes = 4 nickels)	Units 1, 13	Lessons 3-15, 5-3, 5-5, 5-9	Cornerstone Level B; Lessons 1,2,3,4 Working with Data <a href="#">Illuminations</a> Virtual Manipulatives; <a href="#">Histogram</a> , <a href="#">Bar Charts</a> ; <a href="#">MassLearns.com</a>
5.P.7	Identify and describe relationships between two variables with a constant rate of change. Contrast these with relationships where the rate of change is not constant.	Use physical models like a data table and point graph to analyze relationships between 2 variables.		Lesson 12-8	

Mathematics Resource Map  
K-5

<b>GRADE FIVE</b>					
<b>Strand: Geometry</b>					
<i>Students will engage in <b>problem solving, communicating, reasoning, connecting</b> and <b>representing</b> as they:</i>					
State Standard		Student Expectations	TB	SAFW	Software
5.G.1	Identify polygons based on their properties, including types of interior angles, perpendicular or parallel sides, and congruence of sides (e.g., squares, rectangles, rhombuses, parallelograms, trapezoids, and isosceles, equilateral and right triangles).	Compare and classify acute, right, and obtuse angles. Identify, compare and classify types of triangles (acute, obtuse, right, scalene, isosceles, and equilateral) and quadrilaterals (parallelograms and trapezoids). Identify, compare and classify pentagons, hexagons, and octagons. Draw regular polygons such as acute, right, and obtuse triangles quadrilaterals. Classify triangles and quadrilaterals into their subsets.	Unit 15	Lessons 6-4, 6-5, 6-12	<a href="#">Illuminations</a> Virtual Manipulatives; <a href="#">Congruent Triangles</a> , <a href="#">Geoboard</a> Edmark's Mighty Math Number Heroes; GeoComputer <a href="#">MassLearns.com</a>
5.G.2	Identify three-dimensional shapes (e.g., cubes, prisms, spheres, cones, and pyramids) based on their properties, such as edges and faces.	Identify three-dimensional shapes based on their properties, such as edges and faces, vertices and bases.	Unit 6	Lesson 10-1	<a href="#">Illuminations</a> Virtual Manipulatives; <a href="#">Platonic Solids</a> , <a href="#">Attribute Blocks</a> , <a href="#">Space Blocks</a> Edmark's Mighty Math Number Heroes; GeoComputer <a href="#">MassLearns.com</a>
5.G.3	Identify relationships among points, lines, and planes (e.g. intersecting , perpendicular).	Identify and describe points, lines, angles, and circles. Draw illustrations of points, lines, angles, and segments. Describe the properties of points and lines. Identify segments of lines. Describe the length of a segment.	Unit 14	Lesson 6-1	<a href="#">Illuminations</a> Virtual Manipulatives; <a href="#">Geoboard</a> <a href="#">Coordinate</a> Edmark's Mighty Math Number Heroes; GeoComputer <a href="#">MassLearns.com</a>
5.G.4	Graph points and identify coordinates of points on the Cartesian coordinate plane (all four quadrants).	Graph points and identify coordinates of points on the Cartesian coordinate plane on the first quadrant.	Unit 10	Lessons 3-14, 3-15, 12-9, 12-10	<a href="#">Illuminations</a> Virtual Manipulatives; <a href="#">Geoboard</a> <a href="#">Coordinate</a> Edmark's Mighty Math Number Heroes; GeoComputer <a href="#">MassLearns.com</a> GraphClub
5.G.5	Find the distance between two points on horizontal or vertical number lines.	Find the distance between two points on a horizontal or vertical number line as a change in measurement, e.g. degrees on a thermometer; inches; feet; centimeters or meters on a ruler or tape measure.		Enrichment p. 531 ex.1	<a href="#">Illuminations</a> Virtual Manipulatives; <a href="#">Number Line Bounce</a> Edmark's Mighty Math Number Heroes; GeoComputer <a href="#">MassLearns.com</a> ; Graph Club

## Mathematics Resource Map K-5

Geometry (cont)					
5.G.6	Predict, describe, and perform transformations on two-dimensional shapes (e.g., translations, rotations, and reflections).	Using manipulatives, perform and record simple transformations.(e.g. reflections, rotations, and translations)	Unit 10	Lesson 6-10	<a href="#">Illuminations</a> Virtual Manipulatives; Transformations: <a href="#">Dilation</a> , <a href="#">Reflection</a> , <a href="#">Rotation</a> , <a href="#">Translation</a> Edmark's Mighty Math Number Heroes; GeoComputer <a href="#">MassLearns.com</a> GraphClub
5.G.7	Identify types of symmetry, including line and rotational.	Identify multiple lines of symmetry in two-dimensional shapes. Using manipulatives, illustrate and record examples/patterns that represent rotational symmetry and lines of symmetry.	Unit 10	Lessons 6-11, 6-12, 7-16	<a href="#">Illuminations</a> Virtual Manipulatives; Transformations: <a href="#">Reflection</a> , <a href="#">Rotation</a> Edmark's Mighty Math Number Heroes; GeoComputer <a href="#">MassLearns.com</a> DK's I Love Math Aztec
5.G.8	Determine if two shapes are congruent by measuring sides or a combination of sides and angles, as necessary; or by motions or series of motions (e.g., translations, rotations, and reflections).	Describe properties of congruence for sides and angles. Determine congruence through measurement and transformations.	Unit 6	Lesson 6-9	<a href="#">Illuminations</a> Virtual Manipulatives; <a href="#">Congruent Triangles</a> , <a href="#">Transformations Reflection</a> Edmark's Mighty Math Number Heroes; GeoComputer <a href="#">MassLearns.com</a> DK's I Love Math Aztec
5.G.9	Match three-dimensional objects and their two-dimensional representations (e.g., nets, projections, and perspective drawings)	Create nets for a simple square prism. Build three-dimensional representations from nets; tetrahedrons, simple prisms and pyramids. Match three-dimensional objects and their two-dimensional representations, e.g. nets and projections.		Lesson 10-2	<a href="#">Illuminations</a> <a href="http://www.mathsnet.net/geometry/solid/nets.html">http://www.mathsnet.net/geometry/solid/nets.html</a> <a href="http://www.klikkomath.com/klikko-math-lesson3.html">http://www.klikkomath.com/klikko-math-lesson3.html</a> Mighty Math Calculating Crew; Dr. G. Superhero 3D lab Illuminations Virtual Manipulatives; <a href="#">Platonic Solids</a> DK's I Love Math Aztec <a href="#">MassLearns.com</a>

Mathematics Resource Map  
K-5

<b>GRADE FIVE</b>					
<b>Strand: Measurement</b>					
<i>Students will engage in <b>problem solving, communicating, reasoning, connecting</b> and <b>representing</b> as they:</i>					
State Standard		Student Expectations	TB	SFAW	Software
5.M.1	Apply the concepts of perimeter and area to the solution of problems. Apply formulas where appropriate.	Find the area of polygons including parallelograms and triangles. Describe how to find the perimeter of a polygon and other closed shapes. Calculate perimeter of a regular polygon and apply formulas where appropriate.	Units 4, 15	Lesson 4-3 Unit 9	Edmark's Mighty Math Number Heroes <a href="#">Illuminations</a> Virtual Manipulatives; <a href="#">Geoboard</a> DK's I Love Math Greece
5.M.2	Identify, measure, describe, classify, and construct various angles, triangles, and quadrilaterals.	Identify, measure, describe, classify, and construct various angles, triangles, and quadrilaterals. (e.g. acute, right, obtuse, equilateral, square, rectangle) Measure and construct angles using appropriate tools such as protractors and compasses.	Unit 14	Unit 6	Virtual Manipulatives; <a href="#">Geoboard</a> <a href="#">Illuminations</a>
5.M.3	Solve problems involving proportional relationships and units of measurement (e.g., same system unit conversions, scale models, maps, and speed).	Use a ratio such as 2:1 to create a simple scale drawing or map.	Unit 5	Units 4, 9, 10	<a href="#">Illuminations</a> Virtual Manipulatives; <a href="#">Transformation Dilation</a> <a href="#">MassLearns.com</a>
5.M.4	Find areas of triangles and parallelograms. Recognize that shapes with the same number of sides but different appearances can have the same areas. Develop strategies to find the area of more complex shapes.	Find areas of triangles and parallelograms and other regular polygons. Recognize that shapes with the same number of sides but different appearances can have the same areas. Create an irregular shape using a geoboard or dot paper and find the area of the shape.	Unit 14	Lessons 9-9, 9-10	DK's I Love Math Greece Virtual Manipulatives; <a href="#">Geoboard</a> <a href="#">Illuminations</a>
5.M.5	Identify, measure, and describe circles and relationships of the radius, diameter, circumference, and area (e.g., $d = 2r$ , $p = C/d$ ), and use the concepts to solve problems.	Identify the radius and diameter of a circle. Draw a circle with a given radius and/or a given diameter. Find the circumference of a circle given the radius or diameter and the appropriate formula.	Unit 14	Lessons 6-3, 9-6	Virtual Manipulatives; <a href="#">Geoboard</a> <a href="#">Circular</a> <a href="#">Illuminations</a> <a href="#">MassLearns.com</a>
5.M.6	Find volumes and surface areas of rectangular prisms.	Determine volumes and surface areas for cubes.	Unit 13	Lessons 10-3, 10-5	Virtual Manipulatives; <a href="#">Geoboard</a> <a href="#">Isometric</a> <a href="#">Illuminations</a> <a href="#">MassLearns.com</a>
5.M.7	Find the sum of the angles in simple polygons (up to eight sides) with and without measuring the angles.	Find the sum of interior angles in triangles and quadrilaterals with and without measuring the angles, e.g. find the missing angle of a triangle if two of the angles are $48^\circ$ and $63^\circ$ . Estimate various angles in simple polygons.	Unit 7	Lessons 6-5, 6-6	<a href="#">Illuminations</a> <a href="#">MassLearns.com</a>

Mathematics Resource Map  
K-5

<b>GRADE FIVE</b>					
<b>Strand: Data Analysis, Statistics, and Probability</b>					
<i>Students will engage in <b>problem solving, communicating, reasoning, connecting</b> and <b>representing</b> as they:</i>					
State Standard		Student Expectations	TB	SFAW	Software
5.D.1	Describe and compare data sets using the concepts of median, mean, mode, maximum and minimum, and range.	Using given data, apply the concepts of median, mean, mode, maximum and minimum, and range.	Units 1, 4, 7	Lessons 5-6, 5-13, 12-11	Cornerstone Level B; Lessons 1,2,3,4 Working with Data Virtual Manipulatives; <a href="#">Bar Charts</a> , <a href="#">Histogram</a> , <a href="#">Illuminations</a> Edmark's Mighty Math Number Heroes; Probability
5.D.2	Construct and interpret stem-and-leaf plots, line plots, and circle graphs.	Construct and interpret line plots, line and bar graphs. Interpret and label circle graphs.	Units 3, 4, 8, 13	Unit 5 Lessons 10-11; 11-12; 12-11	TimeLiner GraphClub Virtual Manipulatives; <a href="#">Bar Charts</a> , <a href="#">Histogram</a> DK's I Love Math Challenges
5.D.3	Use tree diagrams and other models (e.g., lists and tables) to represent possible or actual outcomes of trials. Analyze the outcomes.	Construct and analyze two-step tree diagrams such as finding all combinations (possible outcomes).	Unit 8	Lesson 5-11	<a href="#">Illuminations</a> TimeLiner GraphClub
5.D.4	Predict the probability of outcomes of simple experiments (e.g., tossing a coin, rolling a die) and test the predictions. Use appropriate ratios between 0 and 1 to represent the probability of the outcome and associate the probability with the likelihood of the event.	Demonstrate a basic understanding of the probability of an event. Determine a ratio to predict the probability of outcomes of simple experiments (e.g. tossing a coin, rolling a number cube) and test the predictions.	Unit 7	Lessons 5-10, 5-12	Edmark's Mighty Math Number Heroes; Probability Virtual Manipulatives; <a href="#">Coin Toss</a> , <a href="#">Coin Toss Heads in a Row</a> , <a href="#">Stick or Switch</a> <a href="#">Illuminations</a> <a href="#">MassLearns.com</a>