Standard	Benchmark	Indicators
	By the end of the 3 – 4 program, students will . . .	
Number, Number Sense and Operations Standard Students demonstrate number sense, including an understanding of number systems and operations and how they relate to one another. Students compute fluently and make reasonable estimates using paper and pencil, technology-supported and mental methods.	A. Use place value structure of the base-ten number system to read, write, represent and compare whole numbers and decimals. B. Recognize and generate equivalent representations for whole numbers, fractions and decimals. C. Represent commonly used fractions and mixed numbers using words and physical models. D. Use models, points of reference and equivalent forms of commonly used fractions to judge the size of fractions and to compare, describe and order them. E. Recognize and classify numbers as prime or composite and list factors. F. Count money and make change using both coins and paper bills. G. Model and use commutative and associative properties for addition and multiplication. H. Use relationships between operations, such as subtraction as the inverse of addition and division as the inverse of multiplication.	1. Identify and generate equivalent forms of whole numbers; e.g., 36, 30+6, 9 x 4, 46 – 10, number of inches in a yard. 2. Use place value concepts to represent whole numbers and decimals using numerals, words, expanded notation and physical models. For Example: a. Recognize 100 means “10 tens” as well as a single entity (1 hundred) through physical models and trading games. b. Describe the multiplicative nature of the number system; e.g., the structure of 3205 as 3 x 1000 plus 2 x 100 plus 5 x 1. c. Model the size of 1000 in multiple ways; e.g., packaging 1000 objects into 10 boxes of 100, modeling a meter with a centimeter and decimeter strips, or gathering 1000 pop-can tabs. d. Explain the concept of tenths and hundredths using physical models, such as metric pieces, base ten blocks, decimal squares or money.

Standard	Benchmark	Indicators
	By the end of the 3 – 4 program, students will . . .	
	I. Demonstrate fluency in multiplication facts with factors through 10 and corresponding divisions. J. Estimate the results of whole number computations using a variety of strategies, and judge the reasonableness. K. Analyze and solve multi-step problems involving addition, subtraction, multiplication and division of whole numbers. L. Use a variety of methods and appropriate tools (mental math, paper and pencil, calculators) for computing with whole numbers. M. Add and subtract commonly used fractions with like denominators and decimals, using models and paper and pencil.	3. Use mathematical language and symbols to compare and order; e.g., less than, greater than, at most, at least, <, >, =,=,=. 4. Count money and make change using coins and paper bills to ten dollars. 5. Represent fractions and mixed numbers using words, numerals and physical models. 6. Compare and order commonly used fractions and mixed numbers using number lines, models (such as fraction circles or bars), points of reference (such as more or less than one-half), and equivalent forms using physical or visual models. 7. Recognize and use decimal and fraction concepts and notations as related ways of representing parts of a whole or a set; e.g., 3 of 10 marbles are red can also be described as 3/10 and 3 tenths are red. 8. Model, represent and explain multiplication; e.g., repeated addition, skip counting, rectangular arrays and area model. For example:

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	By the end of the 3 – 4 program, Students will . . .	
		a. Use conventional mathematical symbols to write equations for word problems involving multiplication. b. Understand that, unlike addition and subtraction, the factors in multiplication and division may have different units; e.g., 3 boxes of 5 cookies each. 9. Model, represent and explain division; e.g., sharing equally, repeated subtraction, rectangular arrays and area model. For example: a. Translate contextual situations involving division into conventional mathematical symbols. b. Explain how a remainder may impact an answer in a real-world situation; e.g., 14 cookies being shared by 4 children. 10. Explain and use relationships between operations, such as: a. relate addition and subtraction as inverse operations; b. relate multiplication and division as inverse operations; c. relate addition to multiplication (repeated addition); d. relate subtraction to division (repeated subtraction).

Standard	Benchmark	Indicators
	By the end of the 3 – 4 program, Students will . . .	
		11. Model and use the commutative and associative properties for addition and multiplication. 12. Add and subtract whole numbers with and without regrouping. 13. Demonstrate fluency in multiplication facts through 10 and corresponding division facts. 14. Multiply and divide 2- and 3-digit numbers by a single-digit number, without remainders for division. 15. Evaluate the reasonableness of computations based upon operations and the numbers involved; e.g., considering relative size, place value and estimates.

Standard	Benchmark	Indicators
Measurement Standard Students estimate and measure to a required degree of accuracy and precision by selecting and using appropriate units, tools and technologies.	By the end of the 3 – 4 program, students will . . . A. Select appropriate units for perimeter, area, weight, volume (capacity), time and temperature, using: • objects of uniform size; • U.S. customary units; e.g., mile, square inch, cubic inch, second, degree Fahrenheit, and other units as appropriate; • metric units; e.g., millimeter, kilometer, square centimeter, kilogram, cubic centimeter, degree Celsius, and other units as appropriate. B. Know that the number of units is inversely related to the size of the unit for any item being measured. C. Develop common referents for units of measure for length, weight, volume (capacity) and time to make comparisons and estimates. D. Identify appropriate tools and apply counting techniques for measuring side lengths, perimeter and area of squares, rectangles, and simple irregular two-dimensional shapes, volume of rectangular prisms, and time and temperature. E. Tell time to nearest minute.	1. Identify and select appropriate units for measuring: a. length – miles, kilometers and other units of measure as appropriate: b. volume (capacity) – gallons; c. weight – ounces, pounds, grams, or kilograms; d. temperature – degrees (Fahrenheit or Celsius). 2. Establish personal or common referents to include additional units; e.g., a gallon container of milk, a postage stamp is about a square inch. 3. Tell time to the nearest minute and find out elapsed time using a calendar or a clock. 4. Read thermometers in both Fahrenheit and Celsius scales. 5. Estimate and measure length, weight and volume (capacity), using metric and U.S. customary units, accurate to the nearest ½ or ¼ unit as appropriate. 6. Use appropriate measurement tools and techniques to construct a figure or approximate an amount of specified length, weight or volume (capacity); e.g., construct a rectangle with length 2 ½ inches and width 3 inches, fill a measuring cup to the ¾ cup mark.

Standard	Benchmark	Indicators
		7. Make Estimates for perimeter, area and volume using links, titles, cubes and other models.

By the end of the 3 – 4 program, students will . . .

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	By the end of the 3 – 4 program, students will . . .	
Geometry and Spatial Sense Standard Students identify, classify, compare and analyze characteristics, properties and relationships of one-, two- and three-dimensional geometric figures and objects. Students use spatial reasoning, properties of geometric objects, and transformations to analyze mathematical situations and solve problems.	A. Provide rationale for groupings and comparisons of two-dimensional figures and three-dimensional objects. B. Describe and identify points, lines and planes in the environment. C. Describe and identify intersecting, parallel and perpendicular lines or segments in the environment. D. Identify and draw right, obtuse, acute and straight angles. E. Use attributes to describe, classify and sketch plane figures and build solid objects. F. Develop definitions of classes of shapes. G. Find and name locations in coordinate systems. H. Identify and describe line and rotational symmetry in two-dimensional shapes and designs. I. Describe, identify and model reflections, rotations and translations, using physical materials. J. Describe a motion or series of transformations that show two shapes are congruent.	1. Analyze and describe properties of two-dimensional shapes and three-dimensional objects using terms such as vertex, edge, angle, side and face. 2. Identify and describe the relative size of angles with respect to right angles as follows: a. Use physical models, like straws, to make different sized angels by opening and closing the sides, not by changing the side lengths. b. Identify, classify and draw right, acute, obtuse and straight angles. 3. Find and name locations on a labeled grid or coordinate system; e.g., a map or graph. 4. Draw lines of symmetry to verify symmetrical two-dimensional shapes. 5. Build a three-dimensional model of an object composed of cubes; e.g., construct a model based on an illustration or actual object.

Standard	Benchmark	Indicators
	By the end of the 3 – 4 program, students will . . .	
Patterns, Functions and Algebra Standard Students use patterns, relations and functions to model, represent and analyze problem situations that involve variable quantities. Students analyze, model and solve problems using various representations such as tables, graphs and equations.	A. Analyze and extend patterns, and describe the rule in words. B. Use patterns to make predictions, identify relationships, and solve problems. C. Write and solve open sentences and explain strategies. D. Represent an unknown quantity as a variable using a symbol, including letters. E. Use variables to create and solve equations representing problem situations. F. Construct and use a table of values to solve problems associated with mathematical relationships. G. Describe how a change in one variable affects the value of a related variable.	1. Extend multiplicative and growing patterns, and describe the pattern or rule in words. 2. Analyze and replicate arithmetic sequences with and without a calculator. 3. Use patterns to make predictions, identify relationships, and solve problems. 4. Model problem situations using objects, pictures, tables, numbers, letters and other symbols. 5. Write, solve and explain simple mathematical statements, such as $7 + \ > 8$ or $\triangle + 8 = 10$. 6. Express mathematical relationships as equations and inequalities. 7. Create tables to record, organize and analyze data to discover patterns and rules. 8. Identify and describe quantitative changes, especially those involving addition and subtraction; e.g., the height of water in a glass becoming 1 centimeter lower each week due to evaporation.

Standard	Benchmark	Indicators
	By the end of the 3 – 4 program, students will . . .	
Data Analysis and Probability Standard Students pose questions and collect, organize, represent, interpret and analyze data to answer those questions. Students develop and evaluate inferences, predictions and arguments that are based on data.	A. Gather and organize data from surveys and classroom experiments, including data collected over a period of time. B. Read and interpret tables, charts, graphs (bar, picture, line, line plot), and timelines as sources of information, identify main idea, draw conclusions, and make predictions. C. Construct charts, tables and graphs to represent data, including picture graphs, bar graphs, line graphs, line plots and Venn diagrams. D. Read, interpret and construct graphs in which icons represent more than a single unit or intervals greater than one; e.g., each = 10 bicycles or the intervals on an axis are multiples of 10. E. Describe data using mode, median and range. F. Conduct a simple probability experiment and draw conclusions about the likelihood of possible outcomes. G. Identify and represent possible outcomes, such as arrangements of a set of up to four members and possible combinations from several sets, each containing 2 or 3 members. H. Use the set of possible outcomes to describe and predict events.	1. Collect and organize data from an experiment, such as recording and classifying observations or measurements, in response to a question posed. 2. Draw and interpret picture graphs in which a symbol or picture represents more than one object. 3. Read, interpret and construct bar graphs with intervals greater than one. 4. Support a conclusion or prediction orally and in writing, using information in a table or graph. 5. Match a set of data with a graphical representation of the data. 6. Translate information freely among charts, tables, line plots, picture graphs and bar graphs; e.g., create a bar graph from the information in a chart. 7. Analyze and interpret information represented on a timeline. 8. Identify the mode of a data set and describe the information it gives about a data set. 9. Conduct a simple experiment or simulation of a simple event, record the results in a chart, table or graph, and use the results to draw conclusions about the likelihood of unlike outcomes

Standard	Benchmark	Indicators
	By the end of the 3 – 4 program, students will . . .	
		10. Use physical models, diagrams and lists to solve problems involving possible arrangements or combinations of two to four objects.

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	By the end of the 3 – 4 program, students will . . .	
Mathematical Processes Standard Students use mathematical processes and knowledge to solve problems. Students apply problem-solving and decision-making techniques, and communicate mathematical ideas.	A. Apply and justify the use of a variety of problem-solving strategies; e.g., make an organized list, guess and check. B. Use an organized approach and appropriate strategies to solve multi-step problems. C. Interpret results in the context of the problem being solved; e.g., the solution must whole be a whole number of buses when determining the number of buses necessary to transport students. D. Use mathematical strategies to solve problems that relate to other curriculum areas and the real world; e.g., use a timeline to sequence events; use symmetry in artwork. E. Link concepts to procedures and to symbolic notation; e.g., model 3 x 4 with a geometric array, represent one-third by dividing an object into three equal parts. F. Recognize relationships among different topics within mathematics; e.g., the length of an object can be represented by a number. G. Use reasoning skills to determine and explain the reasonableness of a solution with respect to the problem situation.	

Standard	Benchmark	Indicators
	By the end of the 3 – 4 program, students will . . .	
	H. Recognize basic valid and invalid arguments, and use examples and counter examples, models, number relationships, and logic to support or refute.	
	I. Represent problem situations in a variety of forms (physical model, diagram, in words or symbols), and recognize when some ways or representing a problem may be more helpful than others.	
	J. Read, interpret, discuss and write about mathematical ideas and concepts using both everyday and mathematical language.	
	K. Use mathematical language to explain and justify mathematical ideas, strategies and solutions.	