COMPONENT	OBJECTIVES	COMPETENCY
I Number Sense, Concepts, and Operations	1. Reads, writes, and identifies whole numbers through millions or more and decimals through hundredths. **(MA.A.1.2.1)** 2. Reads, writes, and identifies fractions and mixed numbers with denominators including 2, 3, 4, 5, 6, 8, 10, 12, 20, 25, 100, and 1000. **(MA.A.1.2.1)** 3. Uses language and symbols (>, <, =) to compare numbers in the same form and in two different forms such as $0.89 < 1$. **(MA.A.1.2.2)** 4. Compares and orders whole numbers through millions or more, using concrete materials, number lines, drawings, and numerals. **(MA.A.1.2.2)** 5. Compares and orders commonly used fractions and decimals to hundredths using concrete materials, drawings, and numerals. **(MA.A.1.2.2)** 6. Locates whole numbers, fractions, mixed numbers, and decimals on a number line. **(MA.A.1.2.2)** 7. Shows the relative size of numbers through the millions and relate to real-life experiences. **(MA.A.1.2.3)** 8. Represents whole number percents less than 100% and explains the representation. **(MA.A.1.2.3)** 9. Translates problem situations into diagrams and models using whole numbers, fractions, mixed numbers and decimals to hundredths including money notation. **(MA.A.1.2.3)** 10. Uses concrete materials to model and identify equivalent forms of whole numbers, fractions, and decimals. **(MA.A.1.2.4)**	A. The student understands the different ways numbers are represented and used in the real world.

COMPONENT	OBJECTIVES	COMPETENCY
	11. Shows that two numbers in different forms (whole numbers, decimals, fractions and mixed numbers) are equivalent or non-equivalent, using manipulatives, diagrams, and language experience. **(MA.A.1.2.4)**	
	12. Knows the value of a given digit in numbers from hundredths to millions, including writing and interpreting expanded forms of numbers. **(MA.A.2.2.1)**	B. The student understands number systems.
	13. Uses concrete materials and symbolic notation to represent numbers in bases other than base ten, such as base five. **(MA.A.2.2.2)**	
	14. Reads, writes, and compares the decimal number system to the Roman numeral system using the Roman numerals I, V, X, L, C, D, and M. **(MA.A.2.2.2)**	
	15. Recalls (from memory) basic multiplication facts and related division facts. **(MA.A.3.2.1)**	C. The student understands the effects of operations on numbers and the relationships among these operations, selects appropriate operations, and computes for problem solving.
	16. Knows the inverse relationship of multiplication and division and demonstrates that relationship by writing related fact families. **(MA.A.3.2.1)**	
	17. Explains and demonstrates the multiplication and division of whole numbers using manipulatives, drawings, and algorithms. **(MA.A.3.2.1)**	
	18. Explains and demonstrates the addition and subtraction of common fractions using concrete materials, drawings, story problems, and algorithms. **(MA.A.3.2.1)**	

COMPONENT	OBJECTIVES	COMPETENCY
	19. Explains and demonstrates the addition and subtraction of decimals (to hundredths) using concrete materials, drawings, story problems, and algorithms. **(MA.A.3.2.1)** 20. Knows the properties of numbers including the following: · the identity, commutative, and associative properties of addition · the zero and identity properties of multiplication · the commutative associative, and distributive properties of multiplication. **(MA.A.3.2.1)** 21. Predicts the relative size of solutions in the following: · addition, subtraction, multiplication, and division of whole numbers · addition and subtraction of common fractions · addition and subtraction of decimals to hundredths. **(MA.A.3.2.1)** 22. Uses manipulatives, mental math, and calculators to find sums, differences, and products of fractions and decimals. **(MA.A.3.2.1)** 23. Represents numbers and their opposites in relevant problem situations. **(MA.A.3.2.1)** 24. Uses problem-solving strategies to determine the operation(s) needed to solve one- and two- step problems involving addition, subtraction, multiplication, and division of whole numbers, and addition and subtraction of decimals and fractions. **(MA.A.3.2.2)** 25. Writes number sentences and word problems involving combinations of operations. **(MA.A.3.2.2)** 26. Estimates solutions to, and solves multi-step problems using whole number, fraction, and decimal operations. **(MA.A.3.2.2)**	

COMPONENT	OBJECTIVES	COMPETENCY
	27. Solves real-world problems involving addition, subtraction, multiplication, and division of whole numbers, and addition and subtraction of decimals and fractions using an appropriate method. **(MA.A.3.2.3)** 28. Explains the reason for choosing a particular computing method for a particular problem. **(MA.A.3.2.3)** 29. Solves real-world multiplication problems with whole numbers (three digits by one digit) using concrete materials, drawings, and pencil and paper. **(MA.A.3.2.3)** 30. Solves real-world division problems having divisors of one digit and dividends of three digits, with or without remainders. **(MA.A.3.2.3)** 31. Solves real-world problems involving the addition or subtraction of decimals (to hundredths) or common fractions with like or unlike denominators. **(MA.A.3.2.3)** 32. Selects the appropriate operation to solve specific problems in addition, subtraction, and multiplication of whole numbers, decimals, and fractions, and the division of whole numbers. **(MA.A.3.2.3)** 33. Determines whether estimation or precise calculation is appropriate for a given situation. **(MA.A.3.2.3)**	

COMPONENT	OBJECTIVES	COMPETENCY
	34. Chooses, describes and explains estimation strategies used to determine the reasonableness of solutions to real-world problems. **(MA.A.4.2.1)** 35. Estimates quantities of objects to 500 or more and justifies and explains the reasoning for the estimates. **(MA.A.4.2.1)** 36. Estimates to determine reasonableness of a calculator result. **(MA.A.4.2.1)** 37. Describes and justifies appropriateness of estimating for a given situation and use a variety of estimation strategies, such as rounding, leading digits, and compatible numbers. **MA.A.4.2.1)** 38. Rounds common fractions and mixed numbers to nearest whole and discuss appropriateness. **(MA.A.4.2.1)**	D The student uses estimation in problem solving and computation.
	39. Determines factors, common factors, multiples, common multiples, primes, and composites using manipulatives and diagrams, and applies in appropriate problem solving situations. **(MA.A.5.2.1)** 40. Multiplies by 10, 100, and 1000 recognizing and demonstrating patterns. **(MA.A.5.2.1)** 41. Determines rules for divisibility for 2,3,5,9,10 by using manipulatives, calculators and diagrams. **(MA.A.5.2.1)** 42. Uses models to identify perfect squares to 100. **(MA.A.5.2.1)**	E. The student understands and applies theories related to numbers.

COMPONENT	OBJECTIVES	COMPETENCY
II Measurement	1. Expresses situations involving measurement concepts such as perimeter, area, and volume using appropriate mathematical language and symbols. **(MA.B.1.2.1)** 2. Demonstrates through the use of physical models, manipulatives, diagrams, and counting procedures to investigate measures of length, perimeter, area and volume. **(MA.B.1.2.1)** 3. Knows about varied time intervals, including decades, hours, minutes, and seconds. **(MA.B.1.2.1)** 4. Explores, measures, and classifies common angles using 45^{o}, 90^{o}, and 180^{o}, and uses these angles as reference points for measures of other angles. **(MA.B.1.2.1)** 5. Solves real world problems involving measurement using concrete and pictorial models for: · length (for example, millimeter, quarter-inch, foot, yard, meter) · weight (for example, pounds, ounces, kilograms, grams) · capacity (for example, cup, milliliters) · temperature (Fahrenheit and Celsius) · angles (right). **(MA.B.1.2.2)** 6. Writes and solves real-world problems related to area, perimeter, and volume using concrete material or graphic models and communicates the appropriateness of the solution. **(MA.B.1.2.2)** 7. Uses schedules, calendars and clocks to solve elapsed-time problems. **(MA.B.1.2.2)**	A. The student measures quantities in the real world and uses the measures to solve problems.

COMPONENT	OBJECTIVES	COMPETENCY
	8. Devises nonstandard, indirect ways to compare lengths. **(MA.B.2.2.1)** 9. Uses customary and metric units to compare length, weight, and capacity or volume. **(MA.B.2.2.1)** 10. Uses multiplication or division to convert units of measure within either the customary or metric system. **(MA.B.2.2.1)** 11. Selects an appropriate unit of measure to determine the dimension(s), weight, or capacity of a given object. **(MA.B.2.2.2)**	B. The student compares, contrasts, and converts within systems of measurement (both standard/nonstandard and metric/customary).
	12. Distinguishes situations which call for an estimate from those which call for a computation. **(MA.B.3.2.1)** 13. Solves real-world problems involving estimated measurements, including the following: · length to nearest quarter-inch, centimeter · weight to nearest ounce, gram · time to nearest one-minute interval · temperature to nearest five-degree interval · money to nearest $1. **(MA.B.3.2.1)** 14. Constructs physical models and draw diagrams to represent area and perimeter of appropriate geometric figures, including regular and irregular polygons. **(MA.B.3.2.1)** 15. Understands how to estimate the volume of a rectangular prism using manipulatives or graphic representation. **(MA.B.3.2.1)**	C The student estimates measurements in real-world problem situations.

COMPONENT	OBJECTIVES	COMPETENCY
	16. Verifies estimated perimeters, areas and volumes using appropriate measuring tools and calculators. **(MA.B.3.2.1)**	
	17. Selects an appropriate measurement unit for labeling the solution to real-world problems. **(MA.B.4.2.1)** 18. Selects and uses the appropriate tool for situational measures (for example, measuring sticks, scales and balances, thermometers, measuring cups, gauges). **(MA.B.4.2.2)**	D. The student selects and uses appropriate units and instruments for measurement to achieve the degree of precision and accuracy required in real-world situations.
III Geometry and Spatial Sense	1. Uses appropriate geometric vocabulary to identify, describe and compare two-dimensional and three-dimensional figures. **(MA.C.1.2.1)** 2. Draws and classifies two-dimensional figures having up to eight or more sides. **(MA.C.1.2.1)**	A. The student describes, draws, identifies, and analyzes two- and three- dimensional shapes.
	3. Uses manipulatives to solve problems requiring spatial visualization. **(MA.C.2.2.1)** 4. Understands symmetry, congruency, and reflections in geometric figures using drawings and concrete materials. **(MA.C.2.2.1)** 5. Identifies and creates congruent and similar figures. **(MA.C.2.2.1)** 6. Identifies and performs geometric transformations: flip/reflection, turn/rotation (90° and 180°), slide/translation using concrete and graphic materials. **MA.C.2.2.2)**	B. The student visualizes and illustrates ways in which shapes can be combined, subdivided, and changed.

COMPONENT	OBJECTIVES	COMPETENCY
	7. Knows the effect of a flip, slide, and turn (90^o and 180^o) on a geometric figure. **(MA.C.2.2.2)** 8. Explores tessellations. **(MA.C.2.2.2)** 9. Predicts, describes, and verifies how a geometric figure would look from different viewpoints. **(MA.C.2.2.2)**	
	10. Compares the concepts of area and perimeter through the use of concrete materials and real-world situations. **(MA.C.3.2.1)** 11. Applies the concepts of area and perimeter to solve real-world and mathematical problems. **(MA.C.3.2.1)** 12. Understands how area and perimeter are affected when geometric figures are combined. **(MA.C.3.2.1)** 13. Draws and constructs common geometric figures with specified measurements. **(MA.C.3.2.1)** 14. Knows how to identify, locate, and plot ordered pairs of whole numbers on a graph or on the first quadrant of a coordinate system. **(MA.C.3.2.2)**	C. The student uses coordinate geometry to locate objects in both two- and three-dimensions and to describe objects algebraically.

COMPONENT	OBJECTIVES	COMPETENCY
IV Algebraic Thinking	1. Describes, extends, and creates numerical and geometric patterns through models such as: lists, tables, and charts. **(MA.D.1.2.1)** 2. Poses, solves, and explains problems by identifying a predictable visual or numerical pattern. **(MA.D.1.2.1)** 3. Knows mathematical relationships in patterns (the second shape is the first shape turned 90^{o} degrees). **(MA.D.1.2.2)** 4. Analyzes number patterns and states rules for relationships. **(MA.D.1.2.2)** 5. Discusses explains and analyzes the rule that applies to the pattern. **(MA.D.1.2.2)** 6. Applies the appropriate rule to complete a table or a chart. **(MA.D.1.2.2)**	A The student describes, analyzes, and generalizes a wide variety of patterns, relations, and functions.
	7. Solves problems involving equations or simple inequalities using manipulatives, diagrams, models, symbolic expressions, or written phrases. **(MA.D.2.2.1)** 8. Uses a variable to represent a given verbal expression **(MA.D.2.2.1)** 9. Translates problem-solving situations into expressions and equations using a variable for the unknown. **(MA.D.2.2.1)** 10. Uses physical or pictorial models and graphs (cubes, number line) to solve equations or inequalities. **(MA.D.2.2.2)**	B. The student uses expressions, equations, inequalities, graphs, and formulas to represent and interpret situations.

COMPONENT	OBJECTIVES	COMPETENCY
	11. Uses properties of inverse operations to solve real-life problems involving equations. **(MA.D.2.2.2)**	
V. Data Analysis and Probability	1. Understands the purpose of different parts of a graph: titles, labels, intervals, and key. **(MA.E.1.2.1)** 2. Chooses reasonable titles and labels for graphs. **(MA.E.1.2.1)** 3. Compares and interprets information from different types of graphs including graphs from content-area materials and periodicals. **(MA.E.1.2.1)** 4. Generates, collects, and displays data on a variety of graphs: picto-graphs, line graphs, bar graphs, double bar graphs, and circle graphs. **(MA.E.1.2.1)** 5. Completes and interprets circle graphs using common fractions. **(MA.E.1.2.1)** 6. Analyzes and explains orally and in writing the conclusions of data displays. **(MA.E.1.2.1)** 7. Estimates and identifies measures of central tendency (mean, median, and mode) from data collected. **(MA.E.1.2.2)** 8. Identifies the range on a line graph. **(MA.E.1.2.2)** 9. Uses a calculator to determine the range and mean of a set of data. **(MA.E.1.2.3)** 10. Uses computer applications to examine and evaluate data. **(MA.E.1.2.3)**	A. The student understands and uses the tools of data analysis for managing information.

COMPONENT	OBJECTIVES	COMPETENCY
	11. Uses computer applications to construct graphs. **(MA.E.1.2.3)**	
	12. Determines the number of possible combinations of given items and displays them in an organized way. **(MA.E.2.2.1)**	B The student identifies patterns and makes predictions from an orderly display of data using concepts of probability and statistics.
	13. Represents all possible outcomes for a simple probability situation using models such as organized lists, charts or tree diagrams. **(MA.E.2.2.1)**	
	14. Calculates the probability of an event occurring from a set of all possible outcomes. **(MA.E.2.2.1)**	
	15. Identifies and records using common fractions the possible outcomes of simple experiments using concrete materials such as spinners, number cubes, and coins. **(MA.E.2.2.2)**	
	16. Determines and expresses the probability of an event as a ratio in fraction form. **(MA.E.2.2.2)**	
	17. Conducts experiments to tests predictions. **(MA.E.2.2.2)**	
	18. Designs a class survey to collect data. **(MA.E.3.2.1)**	C. The student uses statistical methods to make inferences and valid arguments about real-world situations.
	19. Creates appropriate graphs (pictographs, bar graphs, line graphs, circle graphs) to display data. **(MA.E.3.2.1)**	
	20. Determines appropriate statistical measures for data (range, mean, median, and mode). **(MA.E.3.2.1)**	

COMPONENT	OBJECTIVES	COMPETENCY
	21. Explains the results of the data using the statistics. **(MA.E.3.2.1)** 22. Uses statistical data to identify trends. **(MA.E.3.2.2)** 23. Makes generalizations from the statistical data. **(MA.E.3.2.2)** 24. Justifies conclusions drawn from the data, graphs or plots, as valid or invalid. **(MA.E.3.2.2)**	