COMPONENT	OBJECTIVES	COMPETENCY
I The Real and Complex Number Systems	1. Identify subsets of complex numbers, and compare their structural characteristics. **(MA.A.2.4.3)** 2. Compare and contrast the properties of real numbers with the properties of complex numbers. **(MA.A.1.4.1), (MA.A.2.4.3)** 3. Perform basic operations on complex numbers, using diagrams, technology, algebraic procedures, and vector representations. **(MA.A.2.4.3)** 4. Define and apply absolute value of complex numbers in algebraic, geometric, and vector representations. **(MA.A.2.4.3)** 5. Solve problems involving equations and inequalities with complex coefficients. **(MA.A.2.4.3)** 6. Prove elementary theorems within various mathematical structures, such as groups and fields, *indirect and mathematical induction.* **(MA.A.2.4.2) (MA.A.2.4.3)**	A. Compare and contrast the properties of the complex number system and its sub-systems with regard to their structural characteristics and identify which sub-systems are isomorphic.
II Symbol Sense	1. Perform operations on polynomials, rational algebraic expressions, and radical expressions, real number exponential expressions, logarithmic expressions, and matrices. **(MA.A.3.4.3)** 2. Determine and use relationships between exponential and logarithmic expressions, and between real number exponents and radical symbolism. **(MA.A.3.4.3)** 3. Use the binomial theorem and Pascal's Triangle to expand binomials and to solve problems using probability.	A. Demonstrate technical facility with algebraic transformations necessary to solve a given problem, including matrices, theory of equations and inequalities.

COMPONENT	OBJECTIVES	COMPETENCY
	4. Factor polynomials over complex numbers, describe geometrically, and apply to real-world situations. 5. Determine and apply relationships among synthetic division, synthetic substitution polynomial factoring and the rational root theorems to solve problems involving polynomial equations. 6. Solve problems involving first degree equations, inequalities, quadratic equations, exponential equations, and logarithmic equations in one variable. 7. Solve systems of linear and/or quadratic equations in two and three variables by a variety of methods, including the use of technology. **(MA.D.2.4.2)** 8. Evaluate determinants, using technology, and use them to solve systems of equations. **(MA.D.2.4.2)** 9. Solve problems involving basic operations with matrices. **(MA.D.2.4.1)** 10. Use properties of matrices to solve problems involving systems of linear equations. **(MA.D.2.4.2)** *11. Use algebraic transformations, to solve real-world problems.*	
III Patterns and Functions	1. Represent and analyze relations and functions verbally, symbolically, and graphically, *including tables or charts*. **(MA.D.1.4.1)** 2. Translate among tabular, symbolic, and graphical representations of functions. **(MA.D.1.4.1)**	A. Use functions to model real world phenomena by representing them symbolically, graphically, and verbally, and choose among various representations of a given problem. **(MA.D.2.4.1)**

COMPONENT	OBJECTIVES	COMPETENCY
	3. Recognize that a variety of problems can be modeled by the same function. **(MA.D.1.4.1)** 4. Use exponential, logarithmic, and other non-linear functions to model real-life processes. 5. Represent sums, products and compositions of functions graphically and algebraically. 6. *Understand operations on, and general properties and behavior of classes of functions.*	
IV Graphical Representations	1. Translate among tabular, symbolic, and graphical representations of functions and their corresponding inequalities. **(MA.D.1.4.1)** 2. Relate the graph of $ax^2 + bx + c = 0$ (or $ax^2 + bx + c < 0$) to the graph of $y = ax^2 + bx + c$ (or $y > ax^2 + bx + c$) and to the Quadratic Formula. 3. Graph a function and its inverse in a Cartesian plane. 4. Analyze the effects of parameter changes of the graphs of functions. **(MA.D.1.4.2)** 5. Represent exponential and logarithmic functions graphically. 6. Identify the graphs and equations of the conic sections including the circle, parabola, ellipse, and hyperbola, and use them to solve problems. 7. Determine maximum and minimal of graphs and interpret the results in problem situations. **(MA.C.3.4.2)**	A. Demonstrate an understanding of the geometry associated with functions by solving problems involving graphical representations of their algebraic counterparts.

COMPONENT	OBJECTIVES	COMPETENCY
	8. Graph absolute value functions, greatest integer functions, and split domain functions in the Cartesian plane and apply to real-life situations. 9. Investigate limiting processes by examining sequences, series, tangents and areas under curves graphically. **(MA.A.2.4.1)**	
V Discrete Mathematics	1. Solve problems using the fundamental counting principle, permutations, and combinations. **(MA.E.2.4.1)** 2. Solve real world problems involving arithmetic and geometric sequences. **(MA.A.5.4.1)** 3. Define sequences recursively. **(MA.D.2.4.1)** *4. Solve problems using linear programming and difference equations.* *5. Discuss problems that arise with computer validation and the application of algorithms.* **(MA.D.2.4.1)**	A. Represent problem situations using discrete structures, such as combinations, finite probability, sequences, and recursion.
VI Statistics and Probability	*1. Find the probability that a simple event will occur and interpret it in mathematical and real-world contexts.* **(MA.E.1.4.3)** *2. Identify independent and dependent events, find the probability of such events and interpret in mathematical and real-world contexts.* **(MA.E.2.4.2)**	*A. Construct and draw inferences from charts, tables, and graphs that summarize data from real-world situations.* **(MA.E.1.4.1)**

COMPONENT	OBJECTIVES	COMPETENCY
	3. Understand and apply measures of central tendencies, variability, and correlation in real context. **(MA.E.1.4.3)** *4. Analyze the effect of data transformations on measures of central tendency and variability.* *5. Apply the concept of random variable to generate and interpret probability distributions.* *6. Determine line of best fit using linear, quadratic, exponential and logarithmic models.*	