

Scope & Sequence	Math Department																		
Reviewed September, 2013																			
	K5	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	Grade 6	Pre-Algebra (PA)	Algebra 1 A (Aa)	Algebra 1b (Ab)	Algebra 1 (A1)	Geometry (G)	Algebra 2 Regular (a2)	Algebra 2 Advance (A2)	College Algebra (CA)	Finite (FI)	Statistics (S)	Pre-Calculus (PC)	Calculus (C)
I. Numbers/Numeration																			
A. Whole Numbers																			
1. Recognizing/Writing	K5	1	2	3	4	5													
2. Comparing	K5	1	2	3	4	5													
3. Ordering	K5	1	2	3	4	5													
4. Recognize Pattern/sequence	K5	1	2	3	4	5													
5. Counting	K5	1	2	3	4	5													
6. Identifying Place Values/Comas		1	2	3	4	5													
7. Rounding			2	3	4	5													
8. Understanding Multiples		1	2	3	4	5													
9. Writing Odd/Even Numbers		1	2	3	4	5													
10. Using Ordinal Numbers	K5	1	2	3	4	5													
11. Reading Number Words	K5	1	2	3	4	5													
12. Recognizing Roman Numbers		1	2	3	4	5													
B. Positive Rational Numbers																			
1. Using Decimals		1	2	3	4	5	6												
2. Comparing Decimals						5	6												
3. Labeling on Number Line						5	6												
4. Rounding to nearest cent						5													
5. Writing decimals as fractions					4	5	6												
6. Identifying fractional parts of numbers	K5	1		3	4	5													
7. Writing remainders as fractions				3	4	5													
8. Recognizing equal fractions				3	4	5	6												
9. Reducing fractions				3	4	5	6												
10. Understanding proper/improper fractions					4	5	6												
11. Finding least common denominators					4	5	6												
12. Converting fractions to decimals						5	6												
13. Using percents						5	6												
C. Real																			
1. Translate verbal expressions to algebraic expressions							6	PA	Aa	Ab	A1	G	a2	A2	CA			PC	C
2. Evaluate expressions containing variables							6	PA	Aa	Ab	A1	G	a2	A2	CA				
3. Use number line for ordering integers							6	PA	Aa	Ab	A1	G	a2	A2	CA				
4. Use symbols of exponents and roots								PA	Aa	Ab	A1	G	a2	A2	CA				
5. Write equivalent fractions, decimals, %							6	PA	Aa	Ab	A1	G	a2	A2	CA				
6. Learn symbols of probability							6	PA	Aa	Ab	A1	G	a2	A2	CA			PC	C
7. Understand concept and symbols of absolute value								PA	Aa	Ab	A1	G	a2	A2					
8. Arrange polynomials by degree										Ab	A1	G	a2	A2					

9. Define and indentify rational and irrational numbers											PA	Aa	Ab	A1	G								
10. Create a matrix and name it using its dimensions											PA	Aa	Ab	A1		a2	A2	CA	FI			PC	
11. Write the identity matrix for any square matrix																	A2	CA	FI			PC	
12. Represent numbers in scientific notation											PA		Ab	A1			A2	CA				PC	
13. Identify the characteristic and the mantissa of a logarithm																	A2	CA				PC	
D. Complex																							
1. Define the imaginary number "i"																a2	A2	CA				PC	
2. Identify the real and imaginary part of a complex number																a2	A2	CA				PC	
3. Express complex numbers in polar form																						PC	
E. Other																							
3. Find common logarithms and antilogarithms																		A2	CA			PC	C
4. Find natural logarithms of numbers																		A2	CA			PC	C
II. Operations																							
A. Addition																							
1. Memorizing Meaning/Basic Facts	K5	1	2	3	4	5																	
2. Add; no renaming	K5	1	2	3	4	5																	
3. Add; 1 renaming		1	2	3	4	5																	
4. Add; 3 or more addends		1	2	3	4	5																	
5. Add; more than one renaming		1	2	3	4	5	6																
6. Estimating			2	3	4	5	6																
7. Checking				3	4	5	6																
8. Adding fractions				3	4	5	6																
9. Adding mixed numbers				3	4	5	6																
10. Adding with uncommon denominators.					4	5	6																
11. Adding decimals					4	5	6																
B. Subtraction																							
1. Memorizing Meaning/Basic Facts	K5	1	2	3	4	5																	
2. Subtract; no renaming	K5	1	2	3	4	5																	
3. Subtract; 1 renaming		1	2	3	4	5																	
4. Subtract; more than 1 renaming		1	2	3	4	5																	
5. Subtract with Zero		1	2	3	4	5	6																
6. Estimating differences			2	3	4	5	6																
7. Checking				3	4	5	6																
8. Sub. Fractions with barrowing				3	4	5	6																
9. Barrowing w/ uncommon Denom.				3	4	5	6																
10. Subtracting decimals				3	4	5	6																
C. Multiplication																							
1. Memorizing Meaning/Basic Facts		1	2	3	4	5																	
2. Understanding Factors		1	2	3	4	5																	
3. Multiplying by 1 digit factor				3	4	5																	
4. Using 4 Ways to show mult. Facts				3	4	5																	
5. Carrying				3	4	5																	
6. Using 6 ways to prove				3	4	5																	

7. Multiplying money				3	4	5															
8. Regrouping Factors				3	4	5															
9. Multiply Two-digit Factors				3	4	5															
10. Understanding Partial Products				3	4	5															
11. Multiply 3 digit times 2 digit factors				3	4	5															
12. Checking					4	5															
13. Multiplying by 10 and 100					4	5															
14. Multiplying by 3 digit factors					4	5	6	PA													
19. Multiplying Fractions					4	5	6	PA													
20. Multiplying Fraction and Whole					4	5	6	PA													
21. Multiplying Fractions and Mixed numbers					4	5	6	PA													
22. Doing Cross Multiplication						5	6	PA													
23. Multiplying Decimals						5	6	PA	Aa												
24. Find the square of a number						5	6	PA	Aa	Ab	A1										
25. Find the cube and higher powers of numbers						5	6	PA	Aa	Ab	A1										
D. Division																					
1. Memorizing Meaning/Basic Facts				2	3	4	5														
2. Divide with One digit Divisor					3	4	5														
3. Use Five steps for division					3	4	5														
4. Checking					3	4	5														
5. Finding Remainders					3	4	5														
6. Dividing Money					3	4	5														
7. Short Division					3	4	5														
8. Divide with Two Digit Divisors					3	4	5														
9. Estimating Quotients					3	4	5														
10. Estimating 2 digit divisors						4	5														
11. Divide with 3 Digit Divisors							5														
12. Divisibility Rules								6	PA					a2							
13. Dividing Fractions						4	5	6													
14. Dividing Decimals						4	5	6													
15. Factoring						4	5	6	PA	Aa					A2	CA		PC	C		
16. Finding Common Factors														a2	A2	CA		PC	C		
17. Finding Greatest Common Factor								6	PA	Aa	A1				A2	CA		PC	C		
18. Finding Least Common Factor								6	PA	Aa	A1				A2	CA		PC	C		
19. Find the square root of a number										Aa	Ab	A1	G	a2	A2	CA		PC	C		
20. Find the cube root and higher roots of numbers.													G	a2	A2	CA		PC	C		
E. Operations with algebraic expressions																					
1. Add, subtract, multiply, divide and simplify monomials.										PA	Aa	Ab	A1		a2	A2	CA		PC	C	
2. Add, subtract, multiply and simplify polynomials										PA	Aa	Ab	A1		a2	A2	CA		PC	C	
3. Factor polynomials										PA	Aa	Ab	A1		a2	A2	CA		PC	C	
4. Divide polynomials using long division and synthetic division.										PA	Aa	Ab	A1		a2	A2	CA		PC	C	
5. Simplify complex fractions																CA			PC	C	
F. Calculator																					
1. Use a calculator to find powers and estimate roots of numbers											Aa	Ab	A1		a2	A2	CA	FI	S	PC	C

2. Input and use a given program on a programmable, graphing calculator																		a2	A2	CA	FI	S	PC	C						
G. Trigonometry																														
1. Use a calculator to find values of trigonometric functions																			A2	CA				PC	C					
2. Use right triangles to find trigonometric values																		G	A2	CA				PC	C					
3. Verify trigonometric identities using various methods																			A2	CA				PC	C					
4. Find values of sine and cosine involving sum and difference formulas																			A2	CA				PC	C					
5. Find values of sine and cosine involving half- and double-angle formulas																			A2	CA				PC	C					
H. Exponents/Roots																														
1. Add, subtract, multiply, divide and simplify radical expressions																			Ab	A1	G	a2	A2	CA		PC	C			
2. Add, subtract, multiply, divide and simplify complex numbers																			Ab	A1		a2	A2	CA		PC	C			
3. Add, subtract, multiply, divide and simplify rational expressions																			Ab	A1		a2	A2	CA		PC	C			
4.. Add, subtract, multiply and divide using scientific notation																							A2			PC	C			
5. Rationalize the denominator of a fraction containing a radical expression																			Ab	A1		a2	A2	CA		PC	C			
5. Simplify expressions containing rational exponents																							A2	CA		PC	C			
6. Simplify radicals containing negative radicands																			Ab	A1			A2	CA		PC	C			
7. Simplify rational expressions containing complex numbers in the denominator																							A2	CA		PC	C			
8. Simplify radicals having various indices																							A2	CA		PC	C			
9. Use the properties of exponents																			Ab	A1		a2	A2	CA		PC	C			
I. Vectors																														
1. Add and subtract vectors graphically																										PC				
2. Add, subtract, multiply, and find the magnitude of vectors algebraically																										PC				
3. Add and subtract vectors in three-dimensional space																										PC				
4. Find the magnitude of vectors in three-dimensional space																										PC				
5. Find the inner and cross products of two vectors																										PC				
6. Determine whether two vectors are perpendicular																										PC				
7. Find the product and quotient of complex numbers in polar form																										PC				
8. Find powers and roots of complex numbers in polar form using DeMoivre's theorem																										PC				
J. Matrices																														
1. Add and subtract matrices																				Aa	Ab	A1			A2	CA	FI		PC	

2. Perform scalar multiplication of matrices											Aa	Ab	A1				A2	CA	FI			PC		
3. Perform matrix multiplication											Aa	Ab	A1				A2	CA	FI			PC		
4. Evaluate 2nd and 3rd order determinants																	A2	CA	FI			PC		
5. Find inverses of 2nd order matrices																	A2	CA	FI			PC		
K. Calculus																								
1. Find the derivative of an algebraic function by using the definition of a derivative. .																								C
2. Apply formulas to find the derivative of algebraic, trigonometric, exponential, and logarithmic functions and their inverses.																								C
3. Apply formulas to find the derivative of the sum, product, quotient, inverse, and composite (chain rule) of elementary functions.																								C
4. Find the derivative of an implicitly defined function.																								C
5. Find the higher order derivatives of algebraic, trigonometric, exponential, and logarithmic functions.																								C
6. Use logarithmic differentiation as a technique to differentiate nonlogarithmic functions.																								C
7. Compute an approximate value for a definite integral using Riemann Sums, Trapezoidal Rule and Simpson's Rule																								C
L. Other																								
1. Decompose a rational expression into partial fractions																							PC	C
III. Equations/ Expressions/ Functions																								
A. General																								
1. Writing a Number Sentence		1	2	3	4	5	6	PA	Aa	Ab	A1													
2. Finding Missing addends		1	2	3	4	5	6	PA	Aa	Ab	A1													
3. Finding Missing Factors			2	3	4	5	6	PA	Aa	Ab	A1													
4. Understanding Order of operation							6	PA	Aa	Ab	A1			a2	A2	CA							PC	
5. Recognize Inequalities			2	3	4	5	6	PA	Aa	Ab	A1													
6. Finding Missing minuends			2	3	4	5	6	PA	Aa	Ab	A1													
7. Using properties of equality						5	6	PA	Aa	Ab	A1	G												
8. Translate word expressions into mathematical expressions								PA	Aa	Ab	A1	G	a2	A2	CA							PC	C	
9. Translate word sentences into equations								PA	Aa	Ab	A1	G	a2	A2	CA							PC	C	
10. Use proportions to solve problems								PA	Aa	Ab	A1	G	a2	A2	CA							PC	C	
11. Use proportions and equations to solve percent problems								PA	Aa	Ab	A1	G	a2	A2	CA							PC	C	
12. Solve equations containing absolute value								PA	Aa	Ab	A1	G	a2	A2	CA							PC	C	
13. Use the properties of inequalities								PA	Aa	Ab	A1	G	a2	A2	CA							PC	C	
14. Identify and solve compound sentences using "and" and "or"									Aa	Ab	A1			a2	A2	CA						PC		
15. Solve absolute value equations and inequalities								PA	Aa	Ab	A1			a2	A2	CA						PC		

16. Determine whether a given relation is a function										Aa	Ab	A1		a2	A2	CA			PC	C	
17. Identify the domain and range of any relation or function									PA	Aa	Ab	A1		a2	A2	CA			PC	C	
18. Identify an odd function and an even function														a2	A2	CA			PC	C	
19. Find the values of functions for given elements of the domain															A2	CA			PC	C	
20. Find the composition of functions algebraically and graphically.															A2	CA			PC	C	
21. Determine the inverse of a relation or a function															A2	CA			PC	C	
22. Find the inverse of a function algebraically and graphically.															A2	CA			PC	C	
23. Explain how composition of functions and finding the inverse of a function affects the domain and range of the functions.															A2	CA			PC		
B. Linear																					
1. Solving linear equations																					
a. Mentally									6	PA	Aa	Ab	A1	G	a2	A2	CA			PC	
b. Substitution										PA	Aa	Ab	A1	G	a2	A2	CA	FI		PC	
c. Inverse operations									6	PA	Aa	Ab	A1		a2	A2	CA	FI		PC	
2. Solve multi-step linear equations																					
a. Using properties for simplification										Aa	Ab	A1		a2	A2	CA	FI		PC	C	
b. Equations with variables on both sides										Aa	Ab	A1		a2	A2	CA	FI		PC	C	
3. Solving system of equations																					
a. Graphing										Aa	Ab	A1		a2	A2	CA	FI		PC	C	
b. Substitution										Aa	Ab	A1		a2	A2	CA	FI		PC	C	
c. Elimination										Aa	Ab	A1		a2	A2	CA	FI		PC	C	
d. Using Cramer's rule														a2	A2				PC	C	
4. Find the distance between two points										Aa	Ab	A1	G	a2	A2	CA			PC	C	
5. Find the slope of a line through two points										Aa	Ab	A1	G	a2	A2	CA			PC	C	
6. Prove geometric theorems involving slope, distance, and midpoints analytically													G								
7. Write linear equations in standard form										Aa	Ab	A1		a2	A2	CA	FI		PC		
8. Determine the slope and intercepts of a line										Aa	Ab	A1	G	a2	A2	CA	FI		PC	C	
9. Write linear equations using point-slope form										Aa	Ab	A1		a2	A2	CA			PC		
10. Write the slope-intercept form of an equation of a line										Aa	Ab	A1	G	a2	A2	CA			PC		
11. Write equations of parallel and perpendicular lines										Aa	Ab	A1	G	a2	A2	CA			PC		
12. Prove geometric theorems involving parallel and perpendicular lines analytically													G								
13. Find zeros of linear functions										Aa	Ab	A1	G		A2	CA					
14. Find the optimum value of a function defined for a polygonal convex set															A2	CA	FI				
15. Find the maximum and minimum values of a function over a region using linear programming techniques.															A2	CA	FI				
16. Solve a system of linear equations in three variables															A2	CA	FI		PC		

C. Matrices																				
1. Solve problems using matrix logic															a2	A2	CA	PC		
2. Find unknown values in equal matrices															a2	A2	CA	PC		
3. Write a system of linear equations as a matrix and use the inverse to solve the system															a2	A2	CA	PC		
4. Solve systems of linear equations using matrix operations on a graphing calculator															a2	A2	CA	FI	PC	
5. Solve a system of equations using an augmented matrix in echelon form															a2	A2	CA	FI	PC	
D. Quadratics																				
1. Solve quadratic equations by graphing															a2	A2	CA		PC	C
2. Solve quadratic equations by factoring										Aa	Ab	A1			a2	A2	CA		PC	C
3. Solve quadratic equations by completing the square															a2	A2	CA		PC	C
4. Solve quadratic equations by the quadratic formula										Aa	Ab	A1			a2	A2	CA		PC	C
5. Solve quadratic equations that have pure imaginary solutions																A2	CA		PC	C
6. Use the discriminant to determine the nature of the roots of a quadratic equation																A2			PC	C
7. Find the sum and product of the roots of a quadratic equation																A2	CA		PC	C
8. Find all possible integral roots of a quadratic equation																A2	CA		PC	C
9. Find a quadratic equation to fit a given condition																A2	CA		PC	C
10. Solve third and fourth degree equations that contain a quadratic factor																A2	CA		PC	C
11. Solve other nonquadratic equations using quadratic techniques																A2			PC	C
12. Write functions in quadratic form																A2			PC	C
13. Identify the quadratic term, the linear term and the constant term of a quadratic function										Aa	Ab	A1			a2	A2	CA		PC	C
14. Explore the effect of changing coefficients for given linear and quadratic functions																A2	CA		PC	
15. Determine the equation of a parabola from given information about the graph																A2	CA		PC	
16. Solve quadratic inequalities in one variable																A2	CA		PC	
E. Polynomials																				
1. Determine roots of polynomial equations															a2	A2	CA		PC	C
2. Apply the fundamental theorem of algebra															a2	A2	CA		PC	C
3. Find the factors of polynomials using the remainder and factor theorems															a2	A2	CA		PC	C
4. Identify all possible rational roots of a polynomial equation by using the rational root theorem																A2			PC	
5. Determine the number of positive and negative real zeros a polynomial function has																A2			PC	

6. Approximate the real zeros of a polynomial function																		A2						PC	C	
F. Conics																										
1. Write equations of parabolas																		a2	A2	CA					PC	C
2. Write equations of circles																			A2	CA					PC	C
3. Write equations of ellipses																			A2						PC	C
4. Write equations of hyperbolas																			A2						PC	C
5. Write the equation of a conic section in standard form																			A2						PC	C
6. Identify a conic section from its equation																			A2						PC	C
7. Use the standard and general forms of the equation of a circle																			A2						PC	C
8. Use the standard and general forms of the equation of a parabola																			A2						PC	C
9. Use the standard and general forms of the equation of an ellipse																			A2						PC	C
10. Use the standard and general forms of the equation of a hyperbola																			A2						PC	C
11. Recognize conic sections by their equations																			A2						PC	C
12. Solve systems of quadratic equations algebraically																									PC	C
G. Radical functions																										
1. Write expressions with rational exponents in simplest radical form and vice versa																			a2	A2	CA				PC	C
2. Evaluate expressions in either exponential or radical form																			a2	A2	CA				PC	C
3. Simplify expressions containing rational exponents																			a2	A2	CA				PC	C
4. Solve radical equations and inequalities																				A2	CA				PC	C
H. Rational functions																										
1. State the domain and range of a rational function.																			a2	A2	CA				PC	C
2. Identify the vertical and horizontal asymptotes of a rational function.																				A2	CA				PC	C
3. Determine horizontal, slant, and vertical asymptotes of rational functions																				A2					PC	C
4. Simplify rational expressions																				A2					PC	C
5. Simplify rational expressions containing complex numbers in the denominator																				A2					PC	C
6. Find the least common denominator of two or more algebraic expressions																									PC	C
7. Solve rational equations and inequalities																				A2					PC	C
I. Exponential and Logarithmic functions																										
1. Evaluate and simplify expressions involving real exponents																										
2. Evaluate expressions with irrational exponents																										
3. Simplify expressions and solve equations involving real exponents																										
4. Write exponential equations in logarithmic form and vice versa																										
5. Evaluate logarithmic expressions																										
6. Find common logarithms and antilogarithms																										

7. Identify the characteristic and the mantissa of a common logarithm																		PC	C
8. Use common logarithms to compute powers and roots														A2	CA			PC	C
9. Evaluate e^x by using the exponential series														A2	CA			PC	C
10. Use the exponential function $y = e^x$														A2	CA			PC	C
11. Find natural logarithms of numbers														A2	CA			PC	C
12. Solve equations using natural logarithms														A2	CA			PC	C
13. Solve equations involving logarithmic functions														A2	CA			PC	C
14. Solve equations or simplify and evaluate expressions using properties of logarithms														A2	CA			PC	C
15. Solve equations with variable exponents using logarithms														A2	CA			PC	C
16. Solve exponential and logarithmic equations and inequalities.														A2				PC	C
17. Demonstrate that the exponential and logarithmic functions are inverse functions.														A2	CA			PC	C
J. Trigonometric functions																			
1. Find linear and angular velocities																		PC	C
2. Find the values of expressions involving sine and cosine										G	a ²				CA			PC	C
3. Find the values of other trigonometric functions															CA			PC	C
4. Find the values of expressions involving trigonometric functions															CA			PC	C
5. Use a calculator to find values of trigonometric functions										G					CA			PC	C
6. Find the amplitude and period for variations of the sine and cosine function															CA			PC	C
7. Use trigonometric identities to simplify and/or evaluate expressions															CA			PC	C
8. Verify trigonometric identities using various methods															CA			PC	C
9. Solve trigonometric equations															CA			PC	C
10. Find the values of the six trigonometric functions of an angle in standard position given a point on its terminal side															CA			PC	C
11. Find the exact values of the six trigonometric functions of special angles															CA			PC	C
12. Find decimal approximations for the values of the six trigonometric functions of any angle															CA			PC	C
13. Find the amplitude, period, and phase shift for a trigonometric function															CA			PC	C
14. Write equations for the trigonometric functions given the amplitude, period, and phase shift															CA			PC	C
15. Evaluate inverse trigonometric functions															CA			PC	C
16. Find principal values of inverse trigonometric functions															CA			PC	C
17. Write equations for inverses of trigonometric functions															CA			PC	C

18. Identify and use reciprocal identities, quotient identities, Pythagorean identities, and symmetry identities																	CA											PC	C		
19. Use the basic trigonometric identities to verify other identities																		CA											PC	C	
20. Use the sum and difference identities for sine, cosine, and tangent functions																		CA											PC	C	
21. Use the double- and half-angle identities for the sine, cosine, and tangent functions																		CA											PC	C	
K. Vectors and polar coordinates																															
1. Find equal, opposite, and parallel vectors																													PC		
2. Find ordered pairs that represent vectors																													PC		
3. Convert from polar coordinates to rectangular coordinates and vice versa																													PC		
4. Write the polar form of a linear equation																													PC		
5. Change complex numbers from rectangular to polar form and vice versa																													PC		
L. Sequences and series																															
1. Find the next term in a sequence by looking for a pattern.										6	PA	Aa	Ab	A1				A2	CA										PC	C	
2. Find the nth term of an arithmetic sequence and find the position of a given term in an arithmetic sequence.													Ab	A1				A2											PC	C	
3. Find arithmetic means.											PA	Aa	Ab	A1				A2											PC		
4. Differentiate between a sequence and a series.																		A2											PC	C	
5. Find the sum of an arithmetic series.																													PC	C	
6. Find specific terms in an arithmetic series.													Ab	A1	G			A2											PC	C	
7. Use sigma notation to denote sums.																		A2											PC	C	
8. Compare and contrast arithmetic and geometric sequences.																		A2											PC	C	
9. Find the nth term of a geometric sequence and the position of a given term in a geometric sequence.														A1				A2											PC	C	
10. Find geometric means.														A1	G			A2											PC	C	
11. Find the sum of a geometric series.																		A2											PC	C	
12. Find specific terms in a geometric series.																		A2											PC	C	
13. Find the limit of the terms of an infinite sequence																													PC	C	
14. Find the sum of an infinite geometric series																													PC	C	
15. Determine whether a series is convergent or divergent																													PC	C	
16. Expand powers of binomials using Pascal's triangle and the Binomial Theorem																													PC	C	
17. Find specific terms of a binomial expansion																													PC		
N. Calculus																															

1. Discuss the properties of functions to include domains, ranges, combinations, odd, even, periodicity, symmetry, asymptotes, zeros, upper and lower bounds, and intervals where the function is increasing or decreasing.																				PC	C	
2. Define and apply the properties of limits of functions, including limits of a constant, sum, product, quotient, one-sided limits, limits at infinity, infinite limits, and nonexistent limits.																					PC	C
3. State the definition of continuity and determine where a function is continuous or discontinuous, including * continuity at a point; * continuity over a closed interval; * application of the Intermediate Value Theorem; and * graphical interpretation of continuity and discontinuity.																						C
4. Investigate and describe the relationship between differentiability and continuity																						C
5. State (without proof) the Mean Value Theorem for derivatives and apply it both algebraically and graphically.																						C
6. Use l'Hopital's rule to find the limit of functions whose limits yield the indeterminate forms: 0/0 and infinity/infinity																						C
7. Find the derivative of a function																						C
8. Find the slope and the equation of a line tangent to the graph of a function at a given point																						C
9. Find the critical points of the graph of a polynomial function and determine if each is a minimum, maximum, or point of inflection																						C
10. Determine continuity or discontinuity of functions																						C
11. Identify the properties of the definite integral, including the Fundamental Theorem of Calculus and the definite integral as an area and as a limit of a sum as well as the fundamental theorem: The integral from a to x of f(t)d(t) dt/dx = f(x)																						C
12. Find the indefinite integral of algebraic, exponential, logarithmic, and trigonometric functions, including special integration techniques of substitution (change of variables) and integration by parts																						C
IV. Problem Solving																						
A. Solving Story Problems using arithmetic																						
1. Ident. Problems w/ too much Info.		1	2	3	4	5	6	PA	Aa	Ab	A1	G	a2	A2	CA							
2. Choose Operations		1	2	3	4	5	6	PA	Aa	Ab	A1											
3. Give sensible answer		1	2	3	4	5	6	PA	Aa	Ab	A1		a2	A2	CA	FI	S	PC	C			
4. Solve Multiple-step problems			2	3	4	5	6	PA	Aa	Ab	A1		a2	A2	CA	FI	S	PC	C			
5. Identify Problem w/ too little info.			2	3	4	5	6	PA	Aa	Ab	A1		a2	A2	CA							

6. Solving Money Problems		1		3	4	5	6	PA	Aa	Ab	A1		a2	A2		FI	S	PC	
7. Recognizing Clue Words				3	4	5	6	PA	Aa	Ab	A1		a2	A2				PC	
B. Use equations to solve verbal problems							6	PA	Aa	Ab	A1		a2	A2	CA	FI		PC	C
C. Use inequalities to solve verbal problems								PA	Aa	Ab	A1		a2	A2	CA	FI		PC	C
D. Solve problems using the prediction equation														A2			S	PC	
E. Use formulas to solve verbal problems									Aa	Ab	A1	G	a2	A2	CA	FI		PC	C
F. Problem solving by drawing a model or diagram, using a chart or table									Aa	Ab	A1	G	a2	A2	CA	FI	S	PC	C
G. Using guess and check							6	PA	Aa	Ab	A1	G	a2	A2	CA			PC	C
H. Working backwards to solve a problem							6	PA	Aa	Ab	A1	G	a2	A2	CA			PC	C
I. Looking for patterns to solve problems							6	PA	Aa	Ab	A1	G	a2	A2	CA			PC	C
J. Solve verbal problems using percent, interest, uniform motion									Aa	Ab	A1	G	a2	A2				PC	C
K. Use geometric figures to solve problems									Aa	Ab	A1	G	a2	A2				PC	C
L. Learn and use basic vocabulary and rules of logic, including laws of syllogism and detachment												G							
M. Understanding and demonstrate inductive and deductive reasoning												G							
N. Solve problems using quadratic equations										Ab	A1			A2	CA			PC	C
O. Solve problems involving direct, inverse, and joint variation										Ab	A1			A2	CA			PC	
P. Use rational expressions to solve problems										Ab	A1			A2	CA			PC	C
Q. Use logarithms to solve problems														A2	CA			PC	C
R. Solve problems involving right triangles using right triangle trigonometry												G			CA			PC	C
S. Solve triangles and problems using the Law of Sines & Cosines												G			CA			PC	
T. Solve problems involving permutations, circular permutations, combinations																		PC	
U. Solve problems involving simple harmonic motion																		PC	
V. Solve problems using vectors and right triangle trigonometry																		PC	
W. Apply the derivative to solve problems																			C
X. Use integration to solve problems																			C
Y. Apply the definite integral to solve problems																			C
V. Measurement/Geometry																			
A. Linear																			
1. Measuring Length/Width		1	2	3	4	5	6	PA	Aa	Ab	A1	G							
2. Recognizing Standard Measure	K5	1	2	3	4	5	6	PA	Aa	Ab	A1	G							
3. Recognizing Metric Measures		1	2	3	4	5	6	PA	Aa	Ab	A1	G							
4. Estimating Distance				3	4	5	6												
5. Converting				3	4	5	6												
6. Add/Subt. Measurements				3	4	5	6						a2	A2	CA			PC	
7. Recognizing International System (SI) Prefixes				3	4	5	6						a2	A2	CA			PC	
8. Finding Perimeter		1	2	3	4	5	6	PA	Aa	Ab	A1	G	a2	A2	CA			PC	

9. Calculating Area					4	5	6	PA	Aa	Ab	A1	G	a2	A2	CA			PC	C
10. Finding Square measures					4	5	6	PA	Aa	Ab	A1	G	a2	A2	CA			PC	
11. Using the Distance Formula									Aa	Ab	A1	G	a2	A2	CA			PC	C
B. Weight																			
1. Understanding Standard weight		1	2	3	4	5	6							A2				PC	
2. Understanding Metric Weight				3	4	5	6							A2				PC	
3. Converting				3	4	5	6							A2				PC	
4. Add/Subt. Weights				3	4	5	6							A2				PC	
C. Capacity																			
1. Finding Volume				3	4	5	6	PA	Aa	Ab	A1	G	a2	A2	CA			PC	C
2. Understanding Metric				3	4	5	6	PA	Aa	Ab	A1	G	a2	A2	CA			PC	C
3. Calculating Standard				3	4	5	6	PA					a2	A2	CA			PC	C
4. Converting				3	4	5	6												
D. Temperature																			
1. Understanding Fahrenheit		1	2	3	4	5	6											PC	C
2. Understanding Celsius			2	3	4	5	6							A2				PC	C
3. Converting					5	6								A2				PC	C
E. Time																			
1. Reading a Clock	K5	1	2																
2. Adding Time		1	2	3	4	5	6												
3. Reading a Calendar	K5	1	2																
4. Converting		1	2	3	4	5	6												
F. Money																			
1. Counting Penny, nickels, dimes	K5	1	2	3	4	5													
2. Counting Quarters, Half Dollars		1	2	3	4	5													
3. Counting dollars	K5	1	2	3	4	5													
4. Budgeting																			
G. Shapes/Angles																			
1. Identify Shapes	K5	1	2	3	4	5	6	PA				G							
2. Measuring angles with a protractor												G							
3. Change radian measure to degree measure and vice versa														CA					
4. Identify coterminal angles														CA				PC	C
H. Use equations with variables to solve perimeter and area problems								PA	Aa	Ab	A1	G	a2	A2	CA			PC	C
I. Use midpoint and distance formulas using number line and coordinate plane									Aa	Ab	A1	G	a2	A2	CA			PC	C
J. Use Pythagorean Theorem									Aa	Ab	A1	G	a2	A2	CA			PC	C
K. Identify and draw models of points, lines, and planes																			
L. Demonstrate 7 basic constructions using straight edge and compass												G	a2	A2	CA			PC	C
M. Use types of angles and pairs of angles to solve problems												G							
N. Use properties of parallel and perpendicular lines to solve problems												G							
O. Understand and practice the concepts of informal and indirect proofs												G							
P. Understand and practice the concepts of two column proofs using deductive thinking.												G							
Q. Identify and classify types of triangles												G							
1. Use triangle postulates to prove triangle congruence and similarity												G							
2. Use proportions to solve similar triangles												G							

3. Understand and solve problems using medians, altitude, and bisectors																			G																		
4. Use properties of right triangles to solve problems																				G		A2	CA						PC	C							
5. Use laws of sine and cosine to solve problems																				G		A2	CA						PC	C							
R. Recognize and apply properties of polygons																				G			CA					PC	C								
1. Work problems using various types of parallelograms and quadrilaterals																				G			CA					PC	C								
2. Find angle measurements and areas of regular plane figures																				G			CA					PC	C								
S. Identify and use properties of circles and lines intersecting circles																				G			CA					PC	C								
T. Use relationships and properties of angles, arcs, chords, tangents, secants, and sectors to solve problems involving circles																				G			CA					PC	C								
U. Identify types and parts of three-dimensional figures																				G																	
1. Find lateral area, total area, and volume of pyramids, cones, cylinders, and prisms																				G								PC	C								
2. Find area and volume of spheres																				G								PC	C								
VI. Graphing																																					
A. Read various types of graphs																																					
1. Understanding Bar Graphs		1	2	3	4	5	6																														
2. Understanding Line Graphs		1	2	3	4	5	6																														
3. Understanding Pictographs	K5	1	2	3	4	5	6																														
4. Understanding Order pairs						5	6																														
5. Understanding Circle Graphs						5	6																														
B. Graph a relation, state its domain and range, and determine if the relation is a function												PA	Aa	Ab	A1		a2	A2	CA									PC	C								
C. Identify equations that are linear and graph them												PA	Aa	Ab	A1	G	a2	A2	CA									PC	C								
1. Use the slope and intercepts to graph a line												PA	Aa	Ab	A1		a2	A2	CA									PC	C								
2. Determine if two lines are parallel, perpendicular, or neither												PA	Aa	Ab	A1		a2	A2	CA									PC	C								
3. Write the equation of a line that is parallel or perpendicular to the graph of a given equation													Aa	Ab	A1	G	a2	A2	CA									PC	C								
D. Identify and graph special functions (direct variation, constant, identity, absolute value, and greatest integer)															A1	G	a2	A2	CA									PC	C								
E. Solve a system of equations by graphing													Aa	Ab	A1		a2	A2	CA	FI							PC	C									
F. Graph a system of inequalities													Aa	Ab	A1			A2	CA	FI							PC	C									
G. Graph trigonometric functions and their inverses																			CA								PC	C									
H. Use a graphing calculator to graph a function within a given domain and range																		A2	CA								PC	C									
Sketch the graph of a rational function.																			CA								PC	C									
Given the graph or the equation of a function, identify the domain and range of the function. Include functions with discontinuities.																			CA																		

Use Venn diagrams to show relationships							6					G				FI				
Use number line to show sets of numbers and to graph inequalities								PA	Aa	Ab	A1			A2						
Graph points in all quadrants of coordinate plane							6	PA	Aa	Ab	A1	G		A2					PC	
Find and graph solutions for relations and functions									Aa	Ab	A1			A2					PC	C
Identify range, domain, and inverse									Aa	Ab	A1			A2					PC	C
Solve equations in two variables by graphing									Aa	Ab	A1	G		A2					PC	C
Make and use a circle graph														A2					PC	C
Identify and draw reflections, translations, rotations, and symmetry														A2					PC	C
Create and draw three dimensional figures on three dimensional axes																				
Use scale factors for enlargement, reduction, and congruence												G								
Determine the equation of a parabola from given information about the graph														A2	CA				PC	
I. Investigate symmetry of functions using a graphing calculator														A2	CA				PC	C
J. Graph a function and its inverse														A2	CA				PC	C
K. Graph rational functions														A2	CA				PC	C
L. Graph polynomial, absolute value, and radical inequalities														A2	CA				PC	C
M. Add and subtract vectors graphically																			PC	
N. Graph polar coordinates and simple polar equations																			PC	
O. Graph conic sections														A2					PC	
P. Graph exponential functions														A2	CA				PC	C
Q. Graph logarithmic equations														A2	CA				PC	C
R. Perform graphical iteration on a linear function																			PC	
S. Plot the orbit of a complex number under iteration in the complex plane																			PC	
Determine if a point escapes or is a prisoner under iteration																			PC	
Determine if a Julia set is connected or is a dust of points																			PC	
Determine if a complex number is inside the Madelbrot set																			PC	
Determine the color of a point outside the Mandelbrot set																			PC	
VII. Probability/Statistics																				
A. Averaging 2 or more numbers				3	4	5	6	PA	Aa	Ab	A1	G	a2	A2	CA				S	
B. Find the median, mode, and mean of sets of data							6	PA	Aa	Ab	A1	G	a2	A2	CA				S	
C. Use the median, mean and mode to interpret data							6	PA	Aa	Ab	A1								S	
D. Draw a scatter plot and find the prediction equation														A2	CA				S	
E. Read and interpret data from line plots and stem-and-leaf plots							6	PA	Aa	Ab	A1			A2					S	
F. Find the range and interquartile range for a set of data								PA						A2					S	
G. Find the standard deviation for a set of data														A2					S	
H. Explore simple probability problems and odds problems								PA	Aa	Ab	A1			A2					S	

I. Use area to solve problems involving geometric probability																A2				S		
J. Solve problems using the Basic Counting Principle																A2				S		
K. Solve problems involving permutations and combinations									Aa	Ab	A1				A2				S			