CONTENT AREA PREPARATION ASSESSMENT:
SECONDARY MATHEMATICS

NAME _____ Date_____

The M. Ed. in Secondary Education requires an understanding of mathematics content and practices, and use of technology and representations to learn. Information provided here will be used to evaluate your knowledge and skills in these areas.

Part I - Did you complete an undergraduate major in mathematics? Yes or No

Part II - List the college level mathematics courses you have completed in the following topic areas, and the grade received in each.

****FOR EACH COURSE LISTED ATTACH A COURSE DESCRIPTION AND/OR SYLLABUS

Topic	**Title of Course Taken**	**Grade**
Calculus I		
Calculus II		
Multivariate Calculus		
Reasoning and Proof		
Computer Programming		
Linear Algebra		
Ordinary Differential Equations		
Partial Differential Equations		
Mathematical Modeling		
Numerical Analysis		
Real Analysis		
Abstract Algebra		
Graph Theory		
Statistics		
Geometry		
Research in Mathematics		

Part III - List additional the college level mathematics courses you have completed in the following topic areas, and the grade received in each.

****FOR EACH COURSE LISTED ATTACH A COURSE DESCRIPTION AND/OR SYLLABUS

Topic	Course	Grade

Part IV - GPA in all Math Courses

TOTAL NUMBER OF CREDITS TAKEN: _____

Total Credits Earned: _____

GPA in Mathematics Courses _____

Part V - Licensure Test - PRAXIS Mathematics Content Knowledge Score (5161)

If you have taken the PRAXIS Mathematics Content Knowledge test please provide your score here.

Date Taken_____ Score_____Meets DC Standards yes no

Part VI - Technology Use

Please use the prompts below to identify your experiences with technology and representational tools, including concrete models, in learning mathematics in the specified categories.

Number and Quantity such as: (1) Structure, properties, relationships, operations, and representations including standard and non-standard algorithms, of numbers and number systems including integer, rational, irrational, real, and complex numbers; (2) Fundamental ideas of number theory (divisors, factors and factorization, primes, composite numbers, greatest common factor, least common multiple, and modular arithmetic); (3) Quantitative reasoning and relationships that include ratio, rate, and proportion and the use of units in problem situations; (4) Vector and matrix operations, modeling, and applications.

Algebra such as: (1) Algebraic notation, symbols, expressions, equations, inequalities, and proportional relationships, and their use in describing, interpreting, modeling, generalizing, and justifying relationships and operations; (2) Function classes including polynomial, exponential and logarithmic, absolute value, rational, and trigonometric, including those with discrete domains (e.g., sequences), and how the choices of parameters determine particular cases and model specific situations; (3) Functional representations (tables, graphs, equations, descriptions, recursive definitions, and finite differences), characteristics (e.g., zeros, intervals of increase or decrease, extrema, average rates of change, domain and range, and end behavior), and notations as a means to describe, reason, interpret, and analyze relationships and to build new functions; (4) Patterns of change in linear, quadratic, polynomial, and exponential functions and in proportional and inversely proportional relationships and types of real-world relationships these functions can model; (5) Linear algebra including vectors, matrices, and transformations; (6) Abstract algebra, including groups, rings, and fields, and the relationship between these structures and formal structures for number systems and numerical and symbolic calculations.

Geometry and Trigonometry such as: (1) Core concepts and principles of Euclidean geometry in two and three dimensions and two-dimensional non-Euclidean geometries; (2) Transformations including dilations, translations, rotations, reflections, glide reflections; compositions of transformations; and the expression of symmetry in terms of transformations; (3) Congruence, similarity and scaling, and their development and expression in terms of transformations; (4) Right triangles and trigonometry; (5) Application of periodic phenomena and trigonometric identities; (6) Identification, classification into categories, visualization, and representation of two- and three-dimensional objects (triangles, quadrilaterals, regular polygons, prisms, pyramids, cones, cylinders, and spheres); (7) Formula rationale and derivation (perimeter, area, surface area, and volume) of two- and three-dimensional objects (triangles, quadrilaterals, regular polygons, rectangular prisms, pyramids, cones, cylinders, and spheres), with attention to units, unit comparison, and the iteration, additivity, and invariance related to measurements; (8) Geometric constructions, axiomatic reasoning, and proof; (9) Analytic and coordinate geometry including algebraic proofs (e.g., the Pythagorean Theorem and its converse) and equations of lines and planes, and expressing geometric properties of conic sections with equations.

Statistics and Probability such as: (1) Statistical variability and its sources and the role of randomness in statistical inference; (3) Creation and implementation of surveys and investigations using sampling methods and statistical designs, statistical inference (estimation of population parameters and hypotheses testing), justification of conclusions, and generalization of results; (4) Univariate and bivariate data distributions for categorical data and for discrete and continuous random variables, including representations, construction and interpretation of graphical displays (e.g., box plots, histograms, cumulative frequency plots, scatter plots), summary measures, and comparisons of distributions; (4) Empirical and theoretical probability (discrete, continuous, and conditional) for both simple and compound events; (5) Random (chance) phenomena, simulations, and probability distributions and their application as models of real phenomena and to decision making

Calculus such as:: (1) Limits, continuity, rates of change, the Fundamental Theorem of Calculus, and the meanings and techniques of differentiation and integration; (2) Parametric, polar, and vector functions; (3) Sequences and series; (4) Multivariate functions; (5) Applications of function, geometry, and trigonometry concepts to solve problems involving calculus

Discrete Mathematics such as: (1) Discrete structures including sets, relations, functions, graphs, trees, and networks; (1) Enumeration including permutations, combinations, iteration, recursion, and finite differences; (3) Propositional and predicate logic; (4) Applications of discrete structures such as modeling and designing data structures

Applicant's Signature _____ Date _____

Math Deficiencies (Advisor's Use Only):

Technology Deficiencies (Advisor's Use Only):