

## Kansas Educator Preparation Program Standards for Mathematics 5-8 Educators

\*\*"Learner(s)" is defined as children including those with disabilities or exceptionalities, who are gifted, and students who represent diversity based on ethnicity, race, socioeconomic status, gender, language, religion, and geographic origin.

<p><b>Standard 1: Mathematical Connections to the Learner and Learning</b>                  Effective teachers of middle level mathematics exhibit in-depth knowledge of pre-adolescent and adolescent development and behavior and use this knowledge to plan and create sequential learning opportunities grounded in mathematics education research where students are actively engaged in the mathematics they are learning and building from prior knowledge and skills. They demonstrate a positive disposition toward mathematical practices and learning, include culturally relevant perspectives in teaching, and demonstrate equitable and ethical treatment of and high expectations for all students. They use instructional tools such as manipulatives, digital tools, and virtual resources to enhance learning while recognizing the possible limitations of such tools. <b>(NCTM Standard 4)</b></p>	
<p><b>Function 1:</b> Preservice teacher candidates exhibit knowledge of pre-adolescent and adolescent learning, development, and behavior and demonstrate a positive disposition toward mathematical processes and learning.</p>	
<p><b>Content Knowledge</b></p>	<p><b>Professional Skills</b></p>
<p>1.1.1 Know how students construct knowledge, acquire skills, and develop disciplined thinking processes including understanding learning progressions at grade level and K-5.</p>	<p>1.1.2 Exhibit knowledge of pre-adolescent and adolescent learning, development, and behavior.</p>
	<p>1.1.3 Demonstrate a positive disposition toward mathematical processes and learning.</p>
<p><b>Function 2:</b> Preservice teacher candidates plan and create developmentally appropriate, sequential, and challenging learning opportunities grounded in mathematics education research in which students are actively engaged in building new knowledge from prior knowledge and experiences.</p>	
<p><b>Content Knowledge</b></p>	<p><b>Professional Skills</b></p>
<p>1.2.1 Create a sequence of developmentally appropriate and challenging learning opportunities grounded in mathematics education research in which students are actively engaged in building new knowledge.</p>	<p>1.2.4 Plan and create sequential learning opportunities in which students connect new learning to prior knowledge and experiences.</p>
<p>1.2.2 Create a developmentally appropriate and challenging sequence of instruction for all students that shows a progression of learning over time toward proficiency and understanding. The sequence should build on K-5 understanding and include the appropriate pacing of instruction transitioning from the concrete use of manipulatives to an abstract understanding and use of appropriate algorithms.</p>	
<p>1.2.3 Building on K5 understanding, the sequence includes appropriate pacing of instruction beginning with the concrete use of manipulatives to learn the concept which leads to an abstract understanding and an appropriate algorithm.</p>	
<p><b>Function 3:</b> Preservice teacher candidates incorporate knowledge of individual differences and the cultural and language diversity that exists within classrooms and include culturally relevant perspectives as a means to motivate and engage students.</p>	
<p><b>Content Knowledge</b></p>	<p><b>Professional Skills</b></p>
	<p>1.3.1 Incorporates knowledge of individual differences and the cultural and language diversity that exists within classrooms to motivate and engage students.</p>
	<p>1.3.2 Include culturally relevant perspectives as a means to motivate and engage students.</p>
	<p>1.3.3 Access information about and incorporate resources related to cultural, ethnic, linguistic, gender, and learning differences in their teaching.</p>

<b>Function 4:</b> Preservice teacher candidates demonstrate equitable and ethical treatment of and high expectations for all students.	
<b>Content Knowledge</b>	<b>Professional Skills</b>
	1.4.1 Demonstrate equitable and ethical treatment of all students.
	1.4.2 Have high expectations for all students and persist in helping each student reach his/her full potential.
	1.4.3 Demonstrate respect for and responsiveness to the cultural backgrounds and differing perspectives students bring to the classroom.
<b>Function 5:</b> Preservice teacher candidates apply mathematical content and pedagogical knowledge to select and use instructional tools such as manipulatives and physical models, drawings, virtual environments, spreadsheets, presentation tools, and mathematics-specific technologies (e.g., graphing tools, interactive geometry software, computer algebra systems, and statistical packages); and make sound decisions about when such tools enhance teaching and learning, recognizing both the insights to be gained and possible limitations of such tools. Allow students to use multiple representations appropriate to the concept to show understanding.	
<b>Content Knowledge</b>	<b>Professional Skills</b>
1.5.1 Apply mathematical content and pedagogical knowledge from the state adopted standards, learning progressions, and relevant research on how students learn mathematics in order to select and use instructional tools such as manipulatives and physical models, drawings, virtual environments, spreadsheets, presentation tools, and mathematics-specific technologies. Some examples may include but not limited to: tape diagrams, number lines, double number lines, ratio tables, and tables of values.	
1.5.2 Make sound decisions about when instructional tools enhance teaching and learning and recognize both the insights to be gained and possible limitations of such tools.	
1.5.3 Participate in learning opportunities that address current and emerging technologies in support of mathematics learning and teaching.	

<b>Standard 2: Impact on Student Learning</b>	
Effective teachers of middle level mathematics provide evidence demonstrating that as a result of their instruction, middle level students' conceptual understanding, procedural fluency, strategic competence, adaptive reasoning, and application of major mathematics concepts in varied contexts have increased. These teachers support the continual development of a productive disposition toward mathematics. They show that new student mathematical knowledge has been created as a consequence of their ability to engage students in mathematical experiences that are developmentally appropriate, require active engagement, and include mathematics-specific technology in building new knowledge. <b>(NCTM Standard 5)</b>	
<b>Function 1:</b> Preservice teacher candidates will verify that middle level students demonstrate conceptual understanding; procedural fluency; the ability to formulate, represent, and solve problems; logical reasoning and continuous reflection on that reasoning; productive disposition toward mathematics; and the application of mathematics in a variety of contexts within major mathematical domains.	
<b>Content Knowledge</b>	<b>Professional Skills</b>
2.1.1 Verify that middle level students demonstrate conceptual understanding and procedural fluency.	2.1.5 Verify that middle level students demonstrate a productive disposition toward mathematics.
2.1.2 Verify that middle level students demonstrate the ability to formulate, represent, and solve problems. Verify that students demonstrate understanding of concepts through multiple representations.	2.1.6 Demonstrate sustained and meaningful use of data to inform practice.

2.1.3 Verify that middle level student’s reason logically and reflect on their reasoning.	
2.1.4 Verify that middle level students apply the mathematics they learn in a variety of contexts within major mathematical domains.	
<b>Function 2:</b> Preservice teacher candidates will engage students in developmentally appropriate mathematical activities and investigations that require active engagement and include mathematics-specific technology in building new knowledge.	
<b>Content Knowledge</b>	<b>Professional Skills</b>
2.2.1 Engage students in developmentally appropriate mathematical activities and investigations that include mathematics-specific technology in building new knowledge.	2.2.2 Engage students in developmentally appropriate mathematical activities and investigations that require active engagement in building new knowledge.
	2.2.3 Facilitate students’ ability to develop future inquiries based on current analyses.
<b>Function 3:</b> Preservice teacher candidates will collect, organize, analyze, and reflect on diagnostic, formative, and summative assessment evidence and determine the extent to which students’ mathematical proficiencies have increased as a result of their instruction.	
<b>Content Knowledge</b>	<b>Professional Skills</b>
2.3.1 Determine the extent to which students’ mathematical proficiencies have increased as a result of their instruction.	2.3.2 Collect, organize, analyze, and reflect on diagnostic, formative, and summative assessment data.
	2.3.3 Use assessment results as a basis for designing and modifying their instruction as a means to meet group and individual needs and increase student performance.

<b>Standard 3: Content Knowledge</b>	
Effective teachers of middle level mathematics understand the conceptual foundations of mathematics and can demonstrate and apply knowledge of major mathematics concepts, connections, applications, and how conceptual understanding leads to an understanding of algorithms and procedures, within and among number and quantity, algebra, geometry and trigonometry, statistics and probability, basic concepts of calculus, and discrete mathematics.	
<b>(NCTM Standard 1)</b>	
<b>Function 1: Number and Quantity</b>	
To be prepared to develop student mathematical proficiency, all middle level mathematics teachers should know the following topics related to number and quantity with their content understanding and mathematical practices supported by appropriate technology and varied representational tools, including concrete models.	
<b>Content Knowledge</b>	<b>Professional Skills</b>
3.1.1 Fundamental ideas of number theory; composition and decomposition of numbers which leads to divisors, factors and factorization, primes, composite numbers, common factors (including GCF), common multiples (including LCM), and modular arithmetic.	3.1.6 Understand and extend the learning of concepts from K-5 and how to appropriately utilize those multiple strategies (i.e. number lines, concrete manipulatives, algebra tiles, Cuisenaire rods, fraction strips, area model, and pictorial representations) to support student learning of secondary concepts.
3.1.2 Understand how number theory is related to: structure, properties, relationships, operations, and representations including standard and non-standard algorithms, of numbers and the real number system (whole, integer, rational, and irrational) using multiple strategies including number lines, concrete manipulatives (i.e. algebra tiles, Cuisenaire rods, fraction strips), area model, and pictorial representations.	
3.1.3 Understand how fractions are built from unit fractions and represented on a number line; know the relationships between fractions and their operations through	

manipulatives and visual models, understand and explain the link between concepts and standard algorithms.	
3.1.4 Understand quantitative reasoning and relationships that include ratio, rate, and proportion and the use of units in problem situations, understand the unit rate is the slope of the graph of the proportional relationship and the constant of proportionality, identify the constant of proportionality in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships. These may be modeled using unit rate reasoning, ratio tables, double number lines, and tape diagrams.	
3.1.5 Historical development and perspectives of number, number systems, and quantity including contributions of significant figures and diverse cultures.	
<b>Function 2: Algebra</b> To be prepared to develop student mathematical proficiency, all middle level mathematics teachers should know the following topics related to algebra with their content understanding and mathematical practices supported by appropriate technology and varied representational tools, including concrete manipulatives.	
<b>Content Knowledge</b>	<b>Professional Skills</b>
3.2.1 Algebraic notation, symbols, expressions, equations, inequalities, and proportional relationships, and their use in describing, interpreting, modeling, generalizing, justifying relationships and operations, understanding and explaining the link between concepts and standard algorithms, and explaining the relationships between quantities in the context of the situation. Solving equations using multiple strategies, including explaining each step as following from the equality of numbers asserted at the previous step, using tables of values, and solving one variable equations by graphing.	3.2.7 Understand the two schemas for organizing algebra and functions concepts (equations-based approach to algebra or functions-based approach to algebra) and it's relation to middle level curriculum. Understand the research in the field supporting each and the impact on organization of student learning.
3.2.2 Interpret the structure of an expression in terms of its context; choose and produce equivalent forms to reveal and explain properties and key features using algebraic reasoning, factoring, completing the square, and exponent properties; understand the key features and appropriate use of the various forms of a function within a function family and transforming from one form to another to reveal new properties, including but not limited to linear- standard, slope-intercept, point-slope; quadratic- standard, factored, and vertex form.	
3.2.3 Function families 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.	
3.2.4 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.	

3.2.5- Patterns of change in linear, quadratic, polynomial, and exponential functions and in proportional and simple rational relationships and types of real-world relationships these functions can model.	
3.2.6 Historical development and perspectives of algebra including contributions of significant figures and diverse cultures.	
<p><b>Function 3: Geometry and Trigonometry</b>          To be prepared to develop student mathematical proficiency, all middle level mathematics teachers should know the following topics related to geometry and trigonometry with their content understanding and mathematical practices supported by appropriate technology and varied representational tools, including concrete manipulatives.</p>	
<b>Content Knowledge</b>	<b>Professional Skills</b>
3.3.1 Core concepts and principles of Euclidean geometry in two and three dimensions.	
3.3.2 Transformations including dilations, translations, rotations, reflections, glide reflections; compositions of transformations; and the expression of symmetry in terms of transformations.	
3.3.3 Congruence, similarity and scaling, and their development and expression in terms of transformations.	
3.3.4 Right triangles and trigonometry.	
3.3.5 Application of periodic phenomena and trigonometric identities.	
3.3.6 Identification, classification into categories, visualization, representation of two- and three-dimensional objects (triangles, quadrilaterals, regular polygons, prisms, pyramids, cones, cylinders, and spheres), two dimensional objects that result from the cross section of three dimensional objects, and three dimensional objects that result from rotating a two dimensional object about an axis.	
3.3.7 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.	
3.3.8 Geometric constructions, inductive and deductive reasoning, axiomatic reasoning, and proof.	
3.3.9 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.	
3.3.10 Historical development and perspectives of geometry and trigonometry including contributions of significant figures and diverse cultures.	
<p><b>Function 4: Statistics and Probability</b>          To be prepared to develop student mathematical proficiency, all middle level mathematics teachers should know the following topics related to statistics and probability with their content understanding and mathematical practices supported by appropriate technology and varied representational tools, including concrete models.</p>	
<b>Content Knowledge</b>	<b>Professional Skills</b>
3.4.1 Statistical variability and its sources and the role of randomness in statistical inference.	
3.4.2 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.	
3.4.3 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, two-way categorical frequency tables), summary measures, and comparisons of distributions.	
3.4.4 Empirical and theoretical probability (discrete, continuous, and conditional) for both simple and compound events.	
3.4.5 Random (chance) phenomena, simulations, and probability distributions and their application as models of real phenomena and to decision making.	
3.4.6 Historical development and perspectives of statistics and probability including contributions of significant figures and diverse cultures.	
<b>Function 5: Calculus</b> To be prepared to develop student mathematical proficiency, all middle level mathematics teachers should know the following topics related to calculus with their content understanding and mathematical practices supported by appropriate technology and varied representational tools, including concrete models.	
<b>Content Knowledge</b>	<b>Professional Skill</b>
3.5.1 Limits, continuity, rates of change, and the meanings of differentiation and integration.	
3.5.6 Historical development and perspectives of calculus including contributions of significant figures and diverse cultures.	
<b>Function 6: Discrete Mathematics</b> To be prepared to develop student mathematical proficiency, all secondary middle level mathematics teachers should know the following topics related to discrete mathematics with their content understanding and mathematical practices supported by appropriate technology and varied representational tools, including concrete models.	
<b>Content Knowledge</b>	<b>Professional Skills</b>
3.6.1 Discrete structures including sets, relations, functions, tables, and graphs, trees, and networks.	
3.6.2 Enumeration including permutations, combinations, iteration, recursion, and finite differences.	
3.6.3 Propositional and predicate logic.	
3.6.4 Applications of discrete structures such as modeling and solving linear programming problems and designing data structures.	
3.6.5 Historical development and perspectives of discrete mathematics including contributions of significant figures and diverse cultures.	

**Standard 4: Mathematical Practices**  
Effective teachers of middle level mathematics solve problems, represent mathematical ideas, reason, prove, use mathematical models, attend to precision, identify elements of structure, generalize, engage in mathematical communication, and make connections as essential mathematical practices. They understand that these practices intersect

with mathematical content and that understanding relies on the ability to demonstrate these practices within and among mathematical domains and in their teaching. (NCTM Standard 2)	
<b>Function 1:</b> Preservice teacher candidates will use problem solving to develop conceptual understanding, make sense of a wide variety of problems and persevere in solving them, apply and adapt a variety of strategies in solving problems confronted within the field of mathematics and other contexts, and formulate and test conjectures in order to frame generalizations.	
<b>Content Knowledge</b>	<b>Professional Skills</b>
4.1.1 Use problem solving to develop conceptual understanding and to formulate and test generalizations.	
4.1.2 Make sense of a wide variety of problems and persevere in solving them.	
4.1.3 Apply and adapt a variety of strategies in solving problems confronted within the field of mathematics and other contexts.	
4.1.4 Formulate and test conjectures in order to frame generalizations.	
4.1.5 Monitor and reflect on the process of mathematical problem solving.	
<b>Function 2:</b> Preservice teacher candidates will reason abstractly, reflectively, and quantitatively with attention to units, constructing viable arguments and proofs, and critiquing the reasoning of others; represent and model generalizations using mathematics; recognize structure and express regularity in patterns of mathematical reasoning; use multiple representations to model and describe mathematics; and utilize appropriate mathematical vocabulary and symbols to communicate mathematical ideas to others.	
<b>Content Knowledge</b>	<b>Professional Skills</b>
4.2.1 Reason abstractly, reflectively, and quantitatively with attention to units, constructing viable arguments and proofs, and critiquing the reasoning of others.	4.2.6 Understand and utilize research-based techniques and strategies to engage students and colleagues in effective math conversations that increase student learning about concepts.
4.2.2 Represent and model generalizations using mathematics.	4.2.7 Actively seek problems with multiple entry points and encourage students to use, discuss, and justify solution methods with multiple representations and strategies that are mathematically appropriate to the concept.
4.2.3 Recognize structure and express regularity in patterns of mathematical reasoning.	
4.2.4 Use appropriate mathematical vocabulary and symbols to communicate mathematical ideas to others.	
4.2.5 Demonstrate an appreciation for mathematical rigor and inquiry.	
<b>Function 3:</b> Preservice teacher candidates will formulate, represent, analyze, and interpret mathematical models derived from real-world contexts or mathematical problems.	
<b>Content Knowledge</b>	<b>Professional Skills</b>
4.3.1 Formulate, represent, analyze, interpret, and validate mathematical models derived from real-world contexts or mathematical problems.	
4.3.2 Demonstrate flexibility in mathematical modeling when confronted with different purposes or contexts.	
<b>Function 4:</b> Preservice teacher candidates will organize mathematical thinking and use the language of mathematics to express ideas precisely, both orally and in writing to multiple audiences.	
<b>Content Knowledge</b>	<b>Professional Skills</b>
4.4.1 Organize mathematical thinking.	
4.4.2 Use the language of mathematics to express ideas precisely, both orally and in writing to multiple audiences	

including peers, teachers, students, school professionals, and/or other stakeholders.	
<b>Function 5:</b> Preservice teacher candidates will demonstrate the interconnectedness of mathematical ideas and how they build on one another and recognize and apply mathematical connections among mathematical ideas and across various content areas and real-world contexts.	
<b>Content Knowledge</b>	<b>Professional Skills</b>
4.5.1 Demonstrate the interconnectedness of mathematical ideas and how they build on one another.	
4.5.2 Recognize and apply mathematical connections among mathematical ideas and across various content areas and real-world contexts.	
4.5.3 Seek opportunities to promote linkages of mathematical ideas in their teaching.	
<b>Function 6:</b> Preservice teacher candidates will model how the development of mathematical understanding within and among mathematical domains intersects with the mathematical practices of problem solving, reasoning, communicating, connecting, and representing.	
<b>Content Knowledge</b>	<b>Professional Skills</b>
4.6.1 Model how the development of mathematical understanding within and among mathematical domains intersects with the mathematical practices of problem solving, reasoning, communicating, and representing.	
4.6.2 Reflect on how the mathematical practices of problem solving, reasoning, communicating, connecting, and representing impact mathematical understanding.	

<b>Standard 5: Content Pedagogy</b>	
Effective teachers of middle level mathematics apply knowledge of curriculum standards for mathematics and their relationship to student learning within and across mathematical domains. They incorporate research-based mathematical experiences and include multiple instructional strategies and mathematics-specific technological tools in their teaching to develop all students' mathematical understanding and proficiency. They provide students with opportunities to do mathematics – talking about it and connecting it to both theoretical and real-world contexts. They plan, select, implement, interpret, and use formative and summative assessments for monitoring student learning, measuring student mathematical understanding, and informing practice. <b>(NCTM Standard 3)</b>	
<b>Function 1:</b> Apply knowledge of curriculum standards for middle level mathematics and their relationship to student learning within and across mathematical domains.	
<b>Content Knowledge</b>	<b>Professional Skills</b>
5.1.1 Apply knowledge of mathematics curriculum standards for middle level in their teaching within and across mathematical domains.	5.1.3 Demonstrate how mathematics curriculum standards and learning progressions impact the teaching of middle level students at different developmental levels.
5.1.2 Relate mathematical curriculum standards to student learning.	
<b>Function 2:</b> Analyze and consider research in planning for and leading students in rich mathematical learning experiences.	
<b>Content Knowledge</b>	<b>Professional Skills</b>
5.2.1 Incorporate research-based methods when leading students in rich mathematical learning experiences.	5.2.2 Analyze and consider research in planning for mathematics instruction.
	5.2.3 Extend their repertoire of research-based instructional methods that address students' diverse learning needs through participation in leadership opportunities such as

	conferences, just of journals and online resources, and engagement with professional organizations.
<b>Function 3:</b> Plan lessons and units that incorporate a variety of strategies, differentiated instruction for diverse populations, and mathematics-specific and instructional technologies in building all students' conceptual understanding and procedural proficiency.	
<b>Content Knowledge</b>	<b>Professional Skills</b>
5.3.1 Include mathematics-specific and instructional technologies in planned lessons and units.	5.3.3 Plan lessons and units that incorporate a variety of strategies.
5.3.2 Include in planned lessons and units multiple opportunities and solution avenues for students to demonstrate conceptual understanding and procedural proficiency.	5.3.4 Plan lessons and units addressing student differences and diverse populations and how these differences influence student learning of mathematics.
	5.3.5 Build all students' conceptual understanding and procedural proficiency in planned lesson and units.
<b>Function 4:</b> Provide students with opportunities to communicate about mathematics and make connections among mathematics, other content areas, everyday life, and the workplace.	
<b>Content Knowledge</b>	<b>Professional Skills</b>
5.4.1 Design and implement activities and investigations that require communication about mathematics.	5.4.3 Encourage students to employ a variety of forms of communication that target varied audiences and purposes across content areas.
5.4.2 Design and implement activities and investigations that foster students making mathematical connections with other content areas, everyday life events, and the workplace.	
<b>Function 5:</b> Implement techniques related to student engagement and communication including selecting high quality tasks, guiding mathematical discussions, identifying key mathematical ideas, identifying and addressing student misconceptions, and employing a range of questioning strategies.	
<b>Content Knowledge</b>	<b>Professional Skills</b>
5.5.1 Implement techniques for actively engaging students in learning and doing mathematics.	5.5.4 Guide productive mathematical discussion in classrooms centered on key mathematical ideas.
5.5.2 Provide instruction that incorporates high quality tasks and a range of questioning strategies.	5.5.5 Select and apply instructional techniques that assist in identifying and addressing student misconceptions as opportunities for learning.
5.5.3 Engage students in communicating about mathematics.	
<b>Function 6:</b> Plan, select, implement, interpret, and use formative and summative assessments to monitor student progress and inform instruction by reflecting on mathematical proficiencies essential for all students.	
<b>Content Knowledge</b>	<b>Professional Skills</b>
5.6.1 Interpret and use formative and summative assessments to inform instruction by reflecting on mathematical proficiencies essential for all students.	5.6.3 Plan, select, and implement formative and summative assessments.
5.6.2 Monitor students' progress using a variety of assessment tools that gauge advancement toward stated learning goals.	5.6.4 Use assessment results for subsequent instructional planning.

**Standard 6: Professional Knowledge and Skills**

Effective teachers of middle level mathematics are lifelong learners and recognize that learning is often collaborative. They participate in professional development experiences specific to mathematics and mathematics education, draw upon

mathematics education research to inform practice, continuously reflect on their practice, and utilize resources from professional mathematics organizations. <b>(NCTM Standard 6)</b>	
<b>Function 1:</b> Take an active role in their professional growth by utilizing resources from professional mathematics education organizations and participating in professional development experiences that directly relate to the learning and teaching of mathematics.	
<b>Content Knowledge</b>	<b>Professional Skills</b>
6.1.1 Use resources from professional mathematics education organizations such as print, digital, and virtual resources and collections.	6.1.3 Participate in professional development experiences that directly relate to the learning and teaching of mathematics.
6.1.2 Use research-based resources from professional mathematics education organizations that target positively impacting student learning.	6.1.4 Incorporate into their teaching new learning acquired from professional development experiences related to mathematical pedagogy.
<b>Function 2:</b> Engage in continuous and collaborative learning that draws upon research in mathematics education to inform practice; enhance learning opportunities for all students' mathematical knowledge development; involve colleagues, other school professionals, families, and various stakeholders; and advance their development as a reflective practitioner.	
6.2.1 Enhance all students' knowledge of mathematics.	6.2.2 Engage in continuous and collaborative learning as a means of enhancing students' learning opportunities in mathematics.
	6.2.3 Involve colleagues, other school professionals, families, and various stakeholders in the educational process.
	6.2.4 Continue their development as a reflective practitioner.

<b>Standard 7: Middle level Mathematics Field Experiences and Clinical Practice</b>	
Effective teachers of middle level mathematics engage in a planned sequence of field experiences and clinical practice under the supervision of experienced and highly qualified mathematics teachers. They develop a broad experiential base of knowledge, skills, effective approaches to mathematics teaching and learning, and professional behaviors in middle school settings that involve a diverse range and varied groupings of students. Candidates experience a full-time student teaching/internship in middle level mathematics with supervision by university or college faculty with middle-level teaching experience and mathematics content knowledge base. <b>(NCTM Standard 7)</b>	
<b>Function 1:</b> Engage in a sequence of planned field experiences and clinical practice prior to a full-time student teaching/internship experience that include observing and participating in both middle school mathematics classrooms and working with a diverse range of students individually, in small groups, and in large class settings under the supervision of experienced and highly qualified mathematics teachers in varied settings that reflect cultural, ethnic, linguistic, gender, and learning differences.	
<b>Content Knowledge</b>	<b>Professional Skills</b>
7.1.1 Demonstrate mathematics knowledge and skills at both middle and high school settings.	7.1.2 Engage in a planned sequence of pre- student teaching/internship field experiences in middle level mathematics that involve placements at middle school level.
	7.1.3 Are supervised during pre-student teaching/internship field experiences by experienced and highly qualified mathematics teachers.
	7.1.4 Participate in field experiences that occur in varied settings and reflect cultural, ethnic, linguistic, gender, and learning differences.
	7.1.5 Gain an in-depth understanding of the mathematical developmental of students across the middle grades spectrum.

7.1.6 Work with a diverse range of students individually, in small groups, and in large class settings.

**Function 2:** Experience full-time student teaching/internship in middle level mathematics that is supervised by a highly qualified mathematics teacher and a university or college supervisor with middle level mathematics teaching experience or equivalent knowledge base.

7.2.1 Experience full-time student teaching/internship with an experienced and highly qualified mathematics teacher in middle level mathematics.

7.2.2 Are supervised during the full-time student teaching/internship in middle level mathematics by a university or college supervisor with middle level mathematics teaching experience or equivalent knowledge base.

7.2.3 Demonstrate professional behaviors in middle and school settings.

7.2.4 Use student performance data to inform instructional planning and delivery over time.