

# SECONDARY MATHEMATICS EDUCATION

## STANDARDS

### The Candidate:

#### DIVERSITY & POSITIVE TRANSFORMATION

**Disciplinary Foundations (SOE).** Demonstrates interpretive, normative, critical understanding of educational phenomenon and/or praxis through the use of the humanities, social sciences and psychological sciences within the disciplinary foundations of education (anthropology of education, history of education, philosophy of education, psychology of education and sociology of education.).

**Transformation (SOE).** Demonstrates understanding of the human transformative dimensions of educational phenomenon and/or praxis at the level of the self and/or the social.

**Identity Development (SOE).** Understands the dynamic nature of identity development and maintain the role of individual agency in bringing about personal and social transformation.

**Understanding Differences (SOE).** Understands the multiple subjectivities and social relations of race, ethnicity, class, gender, and sexuality as they define a range of lived experiences and understand pedagogy as a project aimed at helping to realize the greatest range of possibilities for all youth irrespective of difference

#### MULTIPLE PERSPECTIVES & INQUIRY, THEORY, AND PRACTICE

**Problem Solving (ISBE math 2, NCTM 1).** Knows, understands and applies the process of mathematical problem solving.

**Reasoning and Proof (ISBE math 3, NCTM 2).** Reasons, constructs, and evaluates mathematical arguments and develop an appreciation for mathematical rigor and inquiry.

**Mathematical Communication (ISBE math 1, NCTM 3).** Communicates own mathematical thinking orally and in writing to peers, faculty and others.

**Mathematical Connections (ISBE math 4, NCTM 4).** Recognizes, uses, and makes connections between and among mathematical ideas and in contexts outside mathematics to build mathematical understanding.

**Mathematical Representation (NCTM 5).** Uses varied representations of mathematical ideas to support and deepen students' mathematical understanding.

**Number and Operations ( IPTS 1, ISBE math 6, NCTM 9).** Demonstrates computational proficiency, including a conceptual understanding of numbers, ways of representing number, relationships among number and number systems, and the meaning of operations.

**Different Perspectives on Algebra (IPT 1, ISBE math 8, NCTM 10).** Emphasizes relationships among quantities including functions, ways of representing mathematical relationships, and the analysis of change.

**Geometries (IPT 1, ISBE math 9, NCTM 11).** Uses spatial visualization and geometric modeling to explore and analyze geometric shapes, structures, and their properties.

**Calculus (IPT 1, ISBE math 8, NCTM 12).** Demonstrates a conceptual understanding of limit, continuity, differentiation, and integration and a thorough background in techniques and application of the calculus.

**Discrete Mathematics (IPT 1, ISBE math 8, NCTM 13).** Applies the fundamental ideas of discrete mathematics in the formulation and solution of problems.

**Data Analysis, Statistics, and Probability (IPT 1, ISBE math 10, NCTM 14).** Demonstrates an understanding of concepts and practices related to data analysis, statistics, and probability.

**Measurement (IPT 1, ISBE math 7, NCTM 15).** Applies and use measurement concepts and tools.

**Human Development and Learning (IPT 2).** Understands how children learn and develop, and can provide learning opportunities that support their intellectual, social and personal development.

**Diverse Students (IPT 3).** Understands how students differ in their approaches to learning and creates instructional opportunities that are adapted to diverse learners.

**Dispositions (NCTM 7).** Supports a positive disposition toward mathematical processes and mathematical learning consistent with reform in mathematics teaching and learning.

**Learning Environment (IPT 5).** Uses an understanding of individual and group motivation and behavior to create a learning environment that encourages positive social interaction, active engagement in learning, and self-motivation.

**Planning for Instruction. (IPT 6).** Plans instruction based upon knowledge of subject matter, students, the community, and curriculum goals.

**Instructional Delivery (IPT 4).** Uses a variety of instructional skills and strategies to encourage students' development of critical thinking, problem solving, and performance skills in the social sciences.

**Classroom Communication. (IPT 7)** Uses knowledge and understanding of effective verbal, nonverbal, and media communication techniques to foster active inquiry, collaboration, and supportive interaction in the classroom

**Assessment (IPT 8).** Understands and uses formal and informal assessment strategies to evaluate and ensure the continuous intellectual, social and physical development of the learner.

**Disabilities. (ISBE core)** Implements appropriate assessment and instruction that supports students with disabilities in mainstream/inclusive settings.

**Technology I (ISBE core tech, ISBE math 5, NCTM 6).** As appropriate for the discipline, enables students to learn about and to use technology.

**Technology II. (ISBE core tech)** Understands and uses technology to enhance his/her teaching

**Language Arts: Literacy Techniques & Strategies (ISBE Core LA 1).** Knows a broad range of literacy techniques and strategies for every aspect of communication and must be able to develop each student's ability to read, write, speak and listen to his or her potential within the demands of the discipline

**Language Arts: Modeling Literacy Skills (ISBE Core LA 2).** Models effective reading, writing, speaking, and listening skills during both direct and indirect instructional activities

**Language Arts: Instruction & Improvement (ISBE Core LA 3).** provides a variety of instructional strategies, constructive feedback, criticism, and improvement strategies to help students improve oral and written language skills

**Secondary Content Area Reading (ISBE math, science, social sci).** Understands the process of reading and demonstrates instructional abilities to teach reading in the discipline (math, science, social science & visual arts).

#### **For T&L Students**

**Inquiry (SOE).** Undertakes independent inquiry and use technology as one tool to assist him or her in the overall inquiry process

### **PERSONALISM, PROFESSIONALISM, & LIFE-LONG LEARNING**

**Collaboration (IPTS 9).** Fosters relationships with school colleagues, parents, and agencies in the larger community to support students' learning and well-being.

**Reflection and Professional Growth (IPTS 10).** Is a reflective practitioner who continually evaluates the effects of his/her choices and actions on others (students, parents, and other professionals in the learning community) and who actively seeks out opportunities to grow professionally.

**Professional Conduct (IPTS 11).** Understands education as a profession, maintains standards of professional conduct, and provides leadership to improve student learning and well-being