

## Math Specialist

The holder is authorized to function as a school-wide resource to support teachers and schools in implementing evidence-based mathematics instruction and assessment practices ~~that are informed by research~~, and to provide instruction in mathematics to students in grades PK-12. This endorsement is limited to those who hold or who are eligible to hold endorsements in early childhood, elementary education, middle grades ~~mathematics~~, ~~the secondary mathematics~~, or special education.

1. Content Knowledge – Effective Mathematics Specialists know, understand, teach and communicate their mathematical knowledge with the breadth of understanding that reflects proficiency within and among the mathematical domains identified by [AMTE](#) and [NCTM](#).
  - 1.1. Number and Operations
  - 1.2. Algebra and Functions
  - 1.3. Geometry and Measurement
  - 1.4. Data Analysis and Probability
  - 1.5. Trigonometry
  - 1.6. Calculus
  - 1.7. Discrete Mathematics
  
2. Pedagogical Knowledge – Math Specialist further student engagement and proficiency by promoting personalized instruction, critical thinking, equitable learning, student exploration, and authentic connections in the classroom. Math Specialists:
  - 2.1. Review and implement current research around best practices in mathematics instruction, its structure, the progression of central concepts and skills, prerequisite relationships, and methods of inquiry.
  - 2.2. Have knowledge of mathematical language, models, and strategies for instruction across mathematical domains and grade levels.
  - 2.3. Promote and facilitate student and teacher discourse.
  - 2.4. Make meaningful connections to scaffold learning, support engagement, and build student understanding between essential knowledge and skills.
  - 2.5. Promote learning environments where all students have access to a high-quality mathematics curriculum, effective teaching and learning, high expectations, and the support and resources needed to maximize their learning potential.

3. Intervention Strategies – Math specialists work with diverse stakeholders to implement supports that promote mathematical thinking for struggling and reluctant learners. Math specialists make curricular decisions and adjustments that consider the learner’s strengths and learning context. Math Specialists:
  - 3.1. Are knowledgeable of how to support students with different learning styles.
  - 3.2. Collaborate with classroom teachers, special educators, school administrators, educational support teams, students, families, and additional diverse stakeholders to identify appropriate interventions for students.
  - 3.3. Support students and families in accessing practices and resources beyond the classroom.
  - 3.4. Identify essential ideas, standards, and/or proficiencies to accommodate learner needs and to support classroom teachers with curricular pacing.
  - 3.5. Support classroom teachers in creating more equitable classroom environments and materials that maximize opportunity for in-classroom differentiation and reduce the need for pull-out interventions during class time.
  - 3.6. Reflect on personal bias to ensure appropriate accommodations for students from marginalized populations.
4. Curricular Development – Math Specialists understand the application of mathematics curriculum in equitable classroom environments and engage in discourse with colleagues and stakeholders to make decisions that improve classroom, schoolwide, and/or districtwide curriculum. Math Specialists:
  - 4.1. Have a working knowledge of mathematics as a curriculum and its vertical progression from prek-12.
  - 4.2. Work with colleagues and specialists in researching and developing relevant curriculum to meet the needs of individual students.
  - 4.3. Find accessible and equitable resources that meet the needs of all learners.
  - 4.4. Evaluate mathematics programs using district curriculum, Vermont state content standards, and current research.
5. Assessment and Data – Math Specialists use current research in student assessment and data design to select appropriate formative and summative assessment methods. Math Specialists share their knowledge and collaborate with colleagues to make data informed classroom-, school-, and district-based decisions in the best interest of all students. Math Specialists:
  - 5.1. Support classroom teachers, administrators, students, families, and stakeholders in interpreting results of special education, state, district, and classroom assessments to develop data informed action steps for individual students and education systems.
  - 5.2. Understand how to use formative, summative, and diagnostic assessments, and communicate the differences between them.

5.3. Utilize asset-based assessment strategies to meet the needs of all learners.

5.4. Recognize and address the existence of test bias for multilingual learners, students with special needs, and additional marginalized populations.

5-4-5.5. Understands the limitations of traditional standardized assessments and can utilize holistic or informal assessments, when appropriate, to meet the needs of all learners.

6. Teacher Leader Knowledge – Math Specialists foster a collaborative learning environment that includes staff, students, families, and the community. They use current research to lead improvement in practices, promote professional learning with adult learners, and advocate for student needs and for the educational profession. Math Specialists:

6.1. Use the principles of adult learning and mentorship to support school leadership in developing a culture of collegiality, trust, and respect that focuses on continuous improvement in instruction, student learning, and leadership decisions.

6.2. Conduct needs assessments to prioritize, promote, design, and facilitate job-embedded professional learning aligned with school, district, and state improvement goals.

6.3. Understand that families, cultures, home language(s), and communities are essential components in educational processes and student learning and work with colleagues to promote ongoing systematic collaboration with families, community members, business and community leaders, and other stakeholders to improve the educational system.

6.4. Understand how educational policy is made at the local, state, and national level as well as the roles of school leaders, boards of education, legislators, and other stakeholders in formulating those policies. They use this knowledge to advocate for student needs and for practices that support effective teaching and increase student learning.

~~7. A master's degree in mathematics education or two years of teaching experience in mathematics.~~

~~8.7.~~ 21 credits in Mathematics Education

~~9.8.~~ A minimum of a practicum, or the equivalent, in mathematics instruction at the PK/elementary (PK-8) or middle/secondary (5-12) instructional level, depending on the authorization sought. For the full PK-12 authorization, a minimum of a practicum, or equivalent, in a PK/Elementary School setting and a second practicum, or equivalent, in a separate Middle/High School setting is required.

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