

FREQUENTLY ASKED QUESTIONS

# State Approved Mathematics Course



IDAHO STATE DEPARTMENT OF EDUCATION  
CONTENT & CURRICULUM | MATHEMATICS

650 W STATE STREET, 2ND FLOOR  
BOISE, IDAHO 83702  
208 332 6800 OFFICE  
[WWW.SDE.IDAHO.GOV](http://WWW.SDE.IDAHO.GOV)

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## REQUIREMENT FOR CERTIFICATION

IDAPA 08.02.02.16 states that all Idaho teachers or administrators working on interim certificates (alternate authorizations, nontraditional routes, reinstatements, or coming from out of the state), with an All Subjects (K-8) endorsement, any mathematics endorsement, Exceptional Child Generalist endorsement, Blended Early Childhood/Early Childhood Special Education endorsement, or Administrator certificate, must complete a state board approved Teaching Mathematical Thinking (TMT) course as a one-time requirement for full certification (4-11-19).

## BACKGROUND

In 2008, through Idaho Statute 33-1627, the Idaho Legislature acknowledged that mathematical skills are increasingly important to the future academic and career success of Idaho students. The statute requires the Idaho State Department of Education (SDE) to:

“Provide high quality professional development for teachers that is intensive, ongoing and connected to classroom practice that focuses on student learning, aligns with school improvement priorities and goals, and builds strong working relationships among teachers.”

Based on the statute’s call to action, the Idaho Math Initiative focuses on educator professional development, a state online mathematics instruction program, and formative assessment.

As a part of the Idaho Math Initiative, a course was developed called Mathematical Teaching for Instruction (MTI), developed by Dr. Jonathan Brendefur, a professor at Boise State University. All teachers in Idaho who taught mathematics, as well as administrators, were required to take the course. This intensive professional development effort over a decade provided a strong foundation for high-quality mathematics education throughout the state. As the Idaho Math Initiative evolved, the SDE created Regional Mathematics Centers at University of Idaho, Idaho State University, and Lewis-Clark State College in addition to Boise State University. As more universities began to offer the course, the name was changed to Teaching Mathematical Thinking (TMT).

Presently, all teachers of mathematics and administrators in Idaho have taken either MTI or TMT as a part of the recertification process. The state approved mathematics course aligns to the standards and dispositions found within all of Idaho’s teacher and administrator preparation programs.

Educators who are new to the state or who did not learn the content of the TMT course in a preservice program are the only teachers who are now required to take the course. This requirement ensures that teachers entering the mathematics education community in Idaho have a common foundation on which to base collaborative conversations to promote high quality mathematics pedagogy across the state. It is highly recommended that all teachers of mathematics, instructional coaches, and administrators in Idaho take this course even if it is not required for certification.

Our state is proud of the community of mathematics educators we have created through the Math Initiative and welcome those new to the profession and our state to join it.

## FREQUENTLY ASKED QUESTIONS

### What is the name of the state approved mathematics course for educators?

Teaching Mathematical Thinking (TMT)

### What is taught in the course?

This course provides an opportunity to study fundamental mathematical theory underlying the content area of number and operation and student reasoning of number and operation topics within a framework of a student-centered, problem-based classroom. Topics will include number systems, ways of representing numbers, and meanings of operations.

Content is similar across all three classes (K-2, 3-5, 6-9), with grade-level topics receiving additional coverage. The K-2 course centers around early numbers, the 3-5 class delves deeply into fractions, and the 6-9 course dedicates additional time to proportional reasoning and the transition to topics of algebra and function. The tables below provide more detail on the course learning objectives at various grade bands.

Appendix A provides more detail on the course learning objectives at various grade bands.

### Why do I have to take TMT?

*The Teaching Mathematical Thinking course is required for educators who are working on interim certificates or coming from out-of-state. However, it is recommended that all Idaho teachers take the course. This course provides a common understanding across the state for best practices in mathematics instruction.*

## Is there an alternate way to show that I know what is in TMT?

*Idaho does not have an alternate method of demonstrating what is taught in the course. The course is not only about mathematical knowledge and pedagogy, but it is also a time for educators coming into our state to become familiar with the Idaho state framework for mathematics instruction. The TMT course allows educators the opportunity to build relationships with key leaders in the mathematics education community.*

## Can we offer TMT in our district with one of our instructional coaches?

*All instructors of the state approved mathematics course are trained and approved by the Idaho Regional Mathematics Center Director in their region.*

## Can a private college, university or company offer a TMT course?

*The Idaho State Department of Education provides the state approved mathematics course across the state through the Idaho Regional Mathematics Centers. The Idaho Regional Mathematics Centers oversee the content, quality and availability of courses in their region and ensure statewide alignment in collaboration with the Idaho State Department of Education.*

## Is the TMT class the same in each region?

*All Teaching Mathematical Thinking courses are governed by the same learning objectives across the state. Individual instructors often tailor materials to a given group of course participants, so there may be slight differences in material or resources presented, but the courses are fundamentally consistent regardless of institution or instructor.*

## Do I have to take TMT in my grade band?

*Although we highly encourage all educators to take a Teaching Mathematical Thinking course associated with their grade level, any TMT course will satisfy the licensure requirement. If a teacher takes a course outside of their grade-band they should expect that the course focus may not exactly match their grade level content.*

## I can't get into a class. Why aren't there more classes?

*Teaching Mathematical Thinking courses are determined by the Regional Mathematics Center staff across the state. The number of courses is a reflection of regional need and staff availability. Contacting Regional Mathematics Center staff is the best way to learn more about upcoming TMT opportunities in your area.*

## How do I find the courses to sign up for one?

Course information for all of the Regional Mathematics Centers can be accessed via the Idaho State Department of Education website at:

<https://www.sde.idaho.gov/academic/math>.

Click on the TMT tab to expand the page and see the links to each center as well as the statewide schedule of courses.

## Is there an online class?

A critical component of the Teaching Mathematical Thinking course is teacher to teacher interaction. For this reason, TMT courses are offered either as face-to-face classes, in a blended hybrid format, or synchronously online.

## Can I take an online class to have my credential completed before I move to Idaho?

If an online course is available, you are welcome to register and take this course prior to moving to Idaho.

## Can I take a class in another region?

We highly recommend you take the course in your region so you can meet the Regional Mathematics Center staff in your area. However, you can take the course in another region for certification purposes.

## Where can I find proof that I took the class?

For many participants, completion of the class is recorded on a transcript as credit. First check with the registrar at the university where you took the class and request a transcript. If you are certain that you did not take the course for credit, you can call the Regional Mathematics Center to assist you in obtaining documentation that the course was completed.

## What framework do the mathematics centers use to guide mathematics instruction?

The Regional Mathematics Centers anchor their work in the document, *Principles to Actions*, published by the National Council of Teachers of Mathematics in 2014.

## Does the TMT course teach teachers about the ISAT?

A general overview of the ISAT assessment system is provided in the course.

## How are the grade bands for courses organized?

*Each Idaho Regional Mathematics Center responds to the needs of their region in organizing the grade level bands and the availability for their courses. High school teachers should take any course that has a Grade 9 designation. The state mathematics course focuses on mathematics pedagogy and foundational mathematics concepts that extend beyond Algebra to upper-level course content.*

## Does the course teach about the Danielson framework?

*Components of the Danielson Group's Framework for Teaching Clusters for Mathematics (2018) are included throughout the course. Teachers engage in activities focused on reviewing content, exploring instructional techniques, and addressing the needs and thinking of students. This is achieved through mathematical tasks, discussions with peers, simulations, and video.*

## How do we align TMT to Preservice?

*The ISDE Mathematics Coordinator works closely with the Director of Teacher Certification to ensure that mathematics teacher educators at Idaho's Colleges of Education are informed about the TMT course objectives and ongoing changes to the course. Regional Mathematics Center Directors work in their universities to align the preservice methods courses to TMT as well as other mathematics professional development offered by the Regional Mathematics Center. The ISDE Mathematics Coordinator collaborates with Idaho colleges and universities that do not house a Regional Mathematics Center as needed.*

## How do I contact the Regional Mathematics Center staff?

The Regional Mathematics Center Director is the point of contact for inquiries. Their contact information is below:

*Region 1 Regional Mathematics Center at University of Idaho*

*Director: Dr. Julie Amador, [jamador@uidaho.edu](mailto:jamador@uidaho.edu)*

*Region 2 Regional Mathematics Center at Lewis-Clark State College*

*Director: Dr. Kacey Diemert, [kmdiemert@lcsc.edu](mailto:kmdiemert@lcsc.edu)*

*Regions 3/4 Regional Mathematics Center at Boise State University*

*Director: Lindsey Yundt, [lindseyyundt@boisestate.edu](mailto:lindseyyundt@boisestate.edu),*

*Regions 5/6 Regional Mathematics Center at Idaho State University*

*Director: Angie Godfrey, Ed. S., [godfange@isu.edu](mailto:godfange@isu.edu)*

## APPENDIX A: COURSE OBJECTIVES

### All Courses – Mathematics Pedagogy

Understand various strategies and mathematical models, thereby increasing the capacity to assess and advance student reasoning.

Anticipate, analyze, and make connections between student mathematical ideas to deepen understanding of topics at this grade-band.

Examine the characteristics of tasks and teaching practices that promote student reasoning and problem solving.

Look for and encourage students to make use of the Standards for Mathematical Practice.

Understand strategies for developing student number sense.

Develop an understanding of the role of context, such as Measurement, Data, and Geometry, in supporting conceptual understanding in the Number and Operations Domain.

### Grades K-2 Course – Early Numeracy and Number Systems

Description of Course: This course provides an opportunity to study fundamental mathematical theory underlying the content area of number and operation and student reasoning of number and operation topics within a framework of a student-centered, problem-based classroom. Topics will include number systems, ways of representing numbers, meanings of operations and how they relate to one another, and computation within the number system as a foundation for algebra. Pedagogical topics will focus on attending to student thinking and reasoning through the use of discourse and questioning, professional noticing, and the effective use of manipulatives or other mathematical tools.

Develop understandings of early numeracy; apply and extend this understanding to concepts of addition and subtraction

Develop an understanding of the critical foundations of number sense relationships and how these ideas support students' place value concepts and algebraic reasoning.

Look for and make use of mathematical structure to understand connections between addition and subtraction with algebraic thinking.

Explore patterns within arithmetic operations for whole numbers to understand how these generalize to other number systems.



### **Grades 3-5 Course – Operations, Fractions and Algebra**

Description of Course: This course provides an opportunity to study fundamental mathematical theory underlying the content area of number and operation and student reasoning of number and operation topics within a framework of a student-centered, problem-based classroom. Topics will include number systems, ways of representing numbers, meanings of operations and how they relate to one another, and computation within the number system as a foundation for algebra. Pedagogical topics will focus on attending to student thinking and reasoning through the use of discourse and questioning, professional noticing, and the effective use of manipulatives or other mathematical tools.

Develop an understanding of number concepts and operations with a specific focus on whole numbers, fractions, and decimals.

Develop an understanding of the learning progression for fractions and critical foundations of proportional relationships that spans multiple grade levels.

Look for and make use of mathematical structure to understand connections between multiplication and division with algebraic thinking.

Develop an understanding of the critical foundations of fractions and proportional relationships at the elementary level and how these ideas build from the students' whole number experience, leading to algebraic reasoning.

### **Grades 6-9 Course – Number Systems, Proportional Relationships and Algebra**

Description of Course: This course provides an opportunity to study fundamental mathematical theory underlying the teaching and learning of number and operation as a foundation for algebra as well as structures of algebraic thinking. Topics will include meanings of operations and how they relate to one another, computation within the number system as a foundation for algebra, the use of mathematical models, and focusing on student thinking. Emphasis will be given to further developing ideas about teaching multiplicative thinking, proportional reasoning, and algebraic reasoning.

Explore patterns within arithmetic operations for whole numbers to understand how these generalize to other number systems.

Explore patterns within arithmetic operations for whole numbers to understand how these generalize to other number systems, specifically using additive and multiplicative reasoning.

Look for and make use of mathematical structure to understand connections between proportional relationships and algebraic thinking.