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Iowa Comprehensive State Mathematics Plan 2025-2033

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Section 1: Goals and Purpose

The Iowa Comprehensive State Mathematics Plan (Iowa CSMP) sets a bold vision for mathematics education, ensuring that every student, from early childhood through high school, becomes a confident and capable problem-solver. The plan incorporates the elements outlined in House File 784 (HF 784) to strengthen instruction, intervention, educator preparation and family/community engagement to raise achievement and close opportunity gaps across the state of Iowa. This document is divided into four large sections: the goals and purpose, the state of mathematics in Iowa, the vision of mathematics instruction in Iowa, and the components of the comprehensive state mathematics plan. References start on page 21.

Goals

Grounded in coherence and continuous improvement, this comprehensive multi-year plan articulates a unified vision focused on early numeracy, conceptual understanding, procedural fluency, application and high expectations for all learners. The plan employs a systems-level approach to ensure instruction is consistent, intentional, and equitable, providing students with timely and targeted support.

Four overarching goals guide the Iowa CSMP:

1. All students demonstrate growth and proficiency across all areas of mathematics—including number sense, algebraic thinking, geometry, measurement, data analysis, and problem-solving—from early learning through graduation, and are prepared for success in STEM fields, technical careers, and higher education.
2. Every school is staffed with effective, qualified, and highly-trained educators who provide evidence-based instruction across PK–12, ensuring students build deep conceptual understanding and procedural fluency.
3. Every school implements a Multi-Tiered System of Supports (MTSS), grounded in high-quality universal instruction and informed by valid and reliable screening and progress monitoring tools, to provide timely and targeted interventions that improve mathematics outcomes.
4. Families and communities are essential partners in the learning of mathematics. Every learning community fosters mathematical knowledge and a shared responsibility among stakeholders to enhance outcomes for all students.

Through these commitments, the Iowa CSMP advances a vision where every student is mathematically proficient, confident in problem-solving, and prepared to thrive in an increasingly data-driven world.

Alignment with Iowa State Board of Education Goals and Outcomes

The Iowa CSMP aligns directly with the Iowa State Board of Education's overarching goals to promote equity in education by closing achievement and opportunity gaps and ensuring high-quality teachers and leaders are in every school. Through its clearly defined goals, targeted actions, and use of evidence-based practices, the Iowa CSMP provides a statewide framework for advancing both priorities.

The Iowa CSMP supports the Iowa State Board of Education's goal of promoting equity and closing gaps by prioritizing early numeracy development and system-wide instructional coherence, fostering the development of strong foundational skills from the earliest grades. The plan mandates the use of valid and reliable mathematics screeners and progress monitoring tools to identify K–6 students who are persistently at risk, so that these students receive timely, personalized intervention. Through the implementation of personalized mathematics plans and a MTSS, the plan strives to ensure that all students receive high-quality core instruction grounded in High-Quality Instructional Materials (HQIMs) alongside targeted supports. Support is further reinforced through the development of family-centered resources, accessible mathematics guides, and real-world engagement strategies designed to extend learning into the home environment.

The Iowa CSMP supports the Iowa State Board of Education's goal of ensuring high-quality teachers and leaders through an immediate investment in targeted professional development for K–6 teachers and instructional coaches in schools most in need, ensuring alignment with the Iowa Academic Standards for Mathematics and HQIMs. It strengthens the educator pipeline by requiring teacher preparation programs to

include coursework and demonstrated competency in number sense, learning progressions, and evidence-based practices in mathematics. The plan also increases educator confidence and instructional capacity through professional learning and implementation support grounded in evidence-based strategies. Additionally, school leaders are supported through aligned coaching models and clear, statewide expectations for instructional improvement.

Together, these actions ensure that Iowa's approach to mathematics education is systemic, equitable, and grounded in the belief that every student deserves access to effective instruction and every educator deserves the necessary resources to deliver quality instruction.

Why Mathematics is Important

Mathematics proficiency is a gateway to opportunity. In today's rapidly evolving world, numeracy is not only essential for everyday problem-solving but also the foundation for participation in an increasingly data- and technology-driven economy. According to the U.S. Bureau of Labor Statistics (2023), STEM occupations are projected to grow 10.4% between 2023 and 2033—nearly three times the growth rate of non-STEM jobs (3.6%)—making mathematical competence a prerequisite for success across disciplines such as engineering, healthcare, advanced manufacturing, computer science, and skilled trades.

Early numeracy is a powerful predictor of long-term academic achievement. While early literacy is critical, research continues to show that early mathematical understanding is often more strongly associated with later academic success across subjects. One longitudinal study found that kindergarten mathematics proficiency was a significant predictor of fifth-grade reading and mathematics performance, highlighting early numeracy as a critical foundation for later learning (Nguyen et al., 2016). Additional research reinforces this connection: a 2024 Urban Institute study found that improvements in childhood mathematics achievement were more strongly correlated with adult earnings than improvements in reading or health outcomes (Werner et al., 2024). While mathematical understanding is a powerful predictor of long-term success, it is important to recognize that mathematics and literacy development are deeply interconnected—improvements in one often support growth in the other. Strengthening early numeracy can enhance comprehension, problem-solving, and reasoning, while strong literacy skills support students in articulating mathematical thinking and engaging with complex tasks.

National and state data consistently reveal persistent gaps in opportunity and achievement in mathematics. When considered alongside the previously described evidence on the critical importance of students' mathematical understanding, these findings underscore the profound impact that high-quality mathematics instruction can have on student outcomes. Addressing these gaps through evidence-based instruction, timely interventions, and meaningful family/community engagement is not only a matter of academic achievement – it is an economic imperative. By equipping every Iowa student with strong mathematic skills and the confidence to use them, the state opens doors to future success in the classroom, the workforce, and beyond.

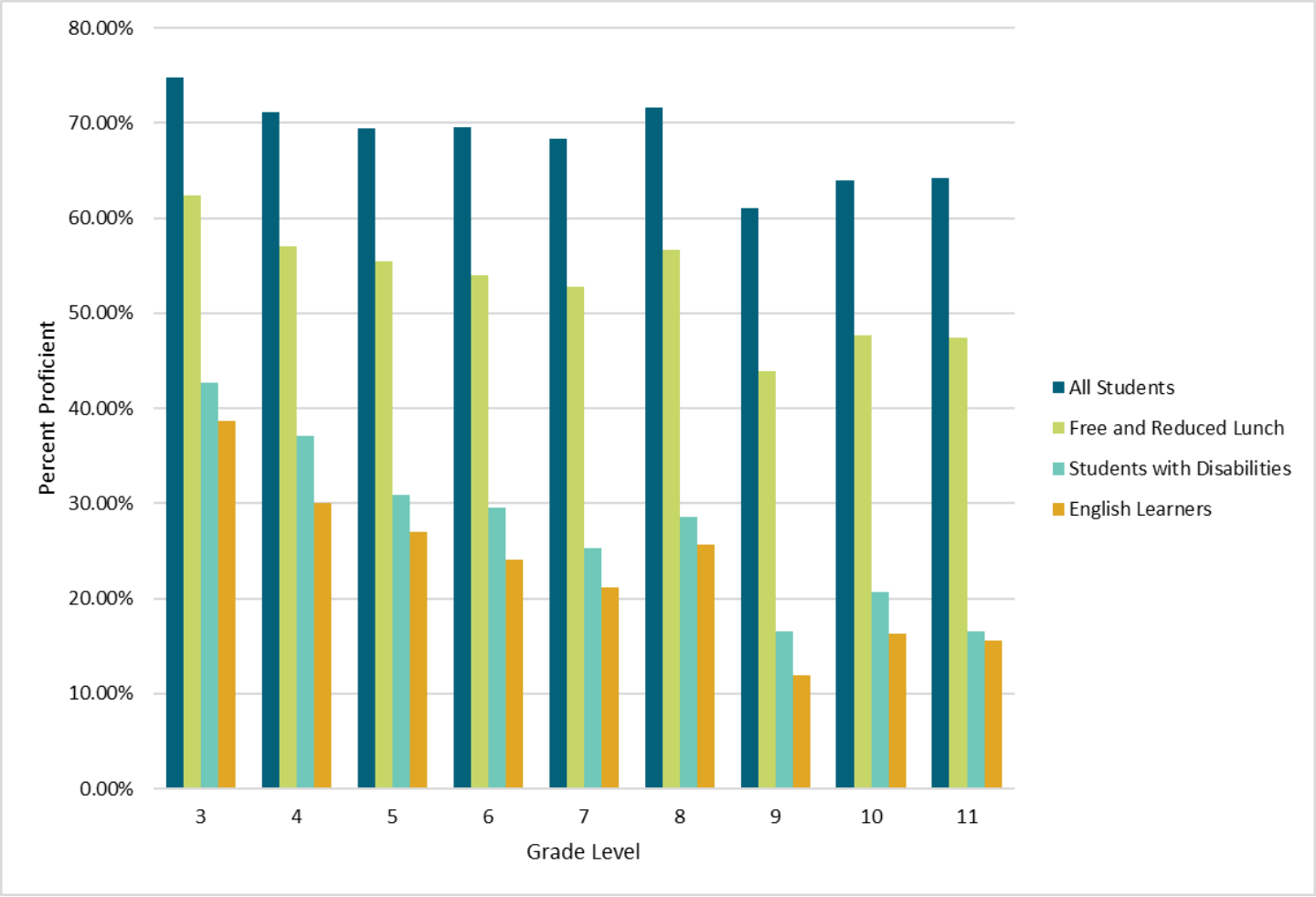
Section 2: State of Mathematics in Iowa

Student Achievement Data

According to the 2024 National Assessment of Educational Progress (NAEP) results, Iowa ranks 30th in the nation for fourth-grade mathematics for all students and 23rd for eighth-grade mathematics. When looking at disaggregated data for fourth-grade mathematics, Iowa ranked 42nd among states for students with disabilities and English learners (ELs). Additionally, Iowa ranked 35th for students with disabilities and 37th in the nation for ELs in eighth-grade mathematics. Iowa's students with disabilities and students who are ELs have experienced some of the most significant achievement gaps in the nation.

Statewide, 68.1% of Iowa's students are proficient in mathematics as measured by Iowa's 2024 Statewide Assessment of Student Progress (ISASP). Comparably, 28.5% of students with disabilities and 24.3% of ELs achieved proficient levels. Graph 1: 2024 ISASP Mathematics Proficiency Results provides an overview of the performance discrepancies for students with disabilities and ELs across grades three through 11.

Graph 1: 2024 Iowa Statewide Assessment of Student Progress Mathematics Proficiency Results



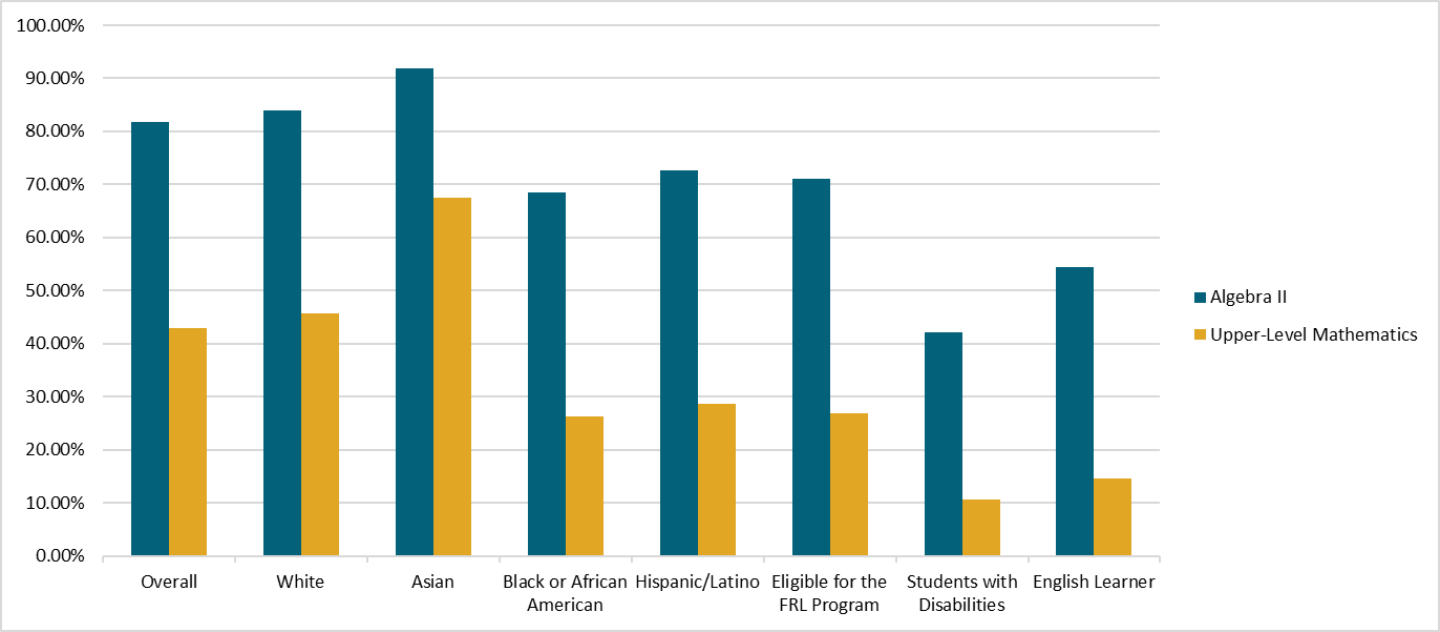
(Iowa Department of Education, 2024a)

Access to Algebra II and Upper-Level Mathematics Courses

Reaching the goal of students being prepared for postsecondary success requires a strong foundation in K-8 mathematics, including deep conceptual understanding, procedural fluency, and student confidence in their mathematical abilities. By establishing this foundation, students are better prepared for Algebra II and upper-level mathematics, which are critical components of the Iowa High School Mathematics Pathways. Expanding access to these courses must begin in early childhood environments and programs that emphasize a robust K-8 foundation.

Iowa's Algebra II standards, updated May 2024, are designed to provide the rigorous mathematical foundation that research identifies as a key predictor of postsecondary success. Nationally, students who complete advanced mathematics standards similar to those in the Iowa Academic Standards for Mathematics are more likely to attend postsecondary educational institutions and demonstrate stronger college persistence and graduation outcomes (Wainstein et al., 2023). By ensuring students master these standards, Iowa's high school graduates are better positioned for success, avoiding remedial mathematics courses (classes that cover below-college-level content and do not count toward a degree or credential) and cultivating essential cognitive skills – such as analytical thinking, quantitative reasoning, and problem solving – that benefit a wide range of disciplines and career paths. Graph 2: Percentage of Class of 2024 Students Taking Algebra II or Upper-Level Mathematics illustrates the enrollment discrepancy between student groups in Algebra II or upper-level mathematics courses. This data includes only students who enrolled in Iowa public high schools during each of the four years, from 9th to 12th grade.

Graph 2: Percent of Class of 2024 Students Taking Algebra II or Upper-Level Mathematics



(Iowa Department of Education, 2024a)

Note. Upper-Level Mathematics include the following courses: Trigonometry (02103), Trigonometry/Mathematic Analysis (02105), Trigonometry/Algebra (02106), Trigonometry/Analytic Geometry (02107), Pre-Calculus (02110), Calculus (02121), Multivariate Calculus (02122), Differential Calculus (02123), AP Calculus AB (02124), AP Calculus BC (02125), Particular Topics in Calculus (02126), Probability and Statistics (02201), Inferential Probability and Statistics (02202), AP Statistics (02203), Particular Topics in Probability and Statistics (02204), Statistics (02205), Probability and Statistics – Independent Study (02207), Probability and Statistics – Other (02209).

Postsecondary Readiness

Students who are not ready for college-level mathematics often begin their postsecondary journey in developmental or remedial courses—classes that do not count toward a degree or credential. According to the State of Iowa Postsecondary Readiness Report (2024c), 5.4% of Iowa high school graduates who enrolled in Iowa public universities or Iowa public community colleges between 2020 and 2022 took a remedial mathematics course within one year of graduation (p. 2). This figure excludes those attending private colleges or institutions outside Iowa.

Reducing the need for remediation is important, but it is only part of the solution. Ensuring that all students complete rigorous coursework—such as Iowa's Algebra II standards — better prepares them for success across a wide range of postsecondary pathways, including military service, skilled trades, technical training, and direct entry into the workforce. A strong foundation in mathematics strengthens problem-solving, quantitative reasoning, and adaptability—critical skills across all career fields. (National Center for Education Statistics (NCES), 2023). Research by James (2013) supports this approach: high school students who complete Iowa's Algebra II standards are more likely to experience positive job market outcomes, including higher earnings and lower unemployment rates. Table 1: Iowa Public High School Graduates Who Enrolled in an Iowa Public College and Took a Remedial Mathematics Class Within One Year of Graduation highlights how developmental mathematics rates vary across student groups, reinforcing the importance of early readiness and equitable access to rigorous coursework.

Table 1: Iowa Public HS Graduates Who Enrolled in an Iowa Public College and Took a Remedial Mathematics Class Within 1 Year of HS Graduation, Classes of 2020-2022

Student Group	Percent of Students
Overall	5.40%
White	4.70%
Asian	2.80%
Black or African American	13.20%
Hispanic/Latino	8.30%
Eligible for FRL Program	8.40%
Not-FRL	3.90%

(Iowa Department of Education, 2024e)

Iowa Mathematics Legislation

In recent years, Iowa has made significant strides in advancing mathematics education, culminating in a key legislative act. On June 2, 2025, Governor Reynolds signed the Iowa Math Counts Act (House File (HF) 784) into law. HF 784 outlines a set of high expectations for all, supports for students struggling with mathematics, and support for teachers and families.

High Expectations

HF 784 reinforces Iowa's commitment to rigorous mathematics expectations for all learners. The legislation requires districts to align instruction with the Iowa Academic Standards for Mathematics and to implement evidence-based practices (instructional strategies and approaches grounded in rigorous research that have been demonstrated to improve student learning outcomes). In addition, HF 784 emphasizes the importance of coherent learning progressions and the use of HGIM. While the statewide plan provides guidance for consistent and effective implementation across classrooms and districts, it also recommends ongoing professional development and collaborative engagement with families and community partners to strengthen mathematics achievement further.

Student Support

HF 784 requires early identification of students who are struggling in mathematics. Schools will screen students in grades K-6 three times a year using an assessment on the Iowa Department of Education's (Department) Approved Early Mathematics Assessments. Using data from screeners and the ISASP, schools will implement strong intervention structures, including personalized mathematics plans and progress monitoring for students who are persistently at risk. The Department has provided a model personalized mathematics plan to support schools with implementation. Districts must work in partnership with families to support the student's progression toward grade-level mathematics proficiency.

Teacher Support

To support pre-service teachers, HF 784 requires higher education institutions with State Board–accredited practitioner preparation programs to assess teacher candidates' foundational mathematics knowledge when they seek K–12 endorsements. Institutions may meet this requirement by ensuring that candidates:

- complete mathematics methods coursework, and
- demonstrate competency in number sense, learning progressions, conceptual understanding, procedural fluency and application, and the use of HQIMs aligned to the Iowa Academic Standards for Mathematics.

This legislation also underscores the need for educators to interpret screening and progress-monitoring data, implement effective interventions, and apply evidence-based instructional practices consistent with Iowa's statewide mathematics plan. The Mathematics Teacher Preparation Workbook (Workbook) is available from

the Department to assist higher education institutions with ensuring their programs meet the requirements of HF 784. Higher education mathematics faculty participated in the development of the Workbook through review and suggestions. The Workbook clarifies the specific competencies aligned with state and national mathematics standards required for the teacher preparation program and provides tools for preparation programs to review their mathematics preparation curriculum.

To further support higher education institutions, the Department provides the Flexibility Formula, an evidence-based professional learning series, to education faculty members to ensure alignment between teacher preparation programs and PK-12 needs. Additionally, the Department provides current HQIMs usage across the state to preparation programs to support teacher candidates' access to high-quality resources and to determine quality clinical placements for preservice teachers.

To support in-service teachers in this work, the Department provides the Flexibility Formula, a statewide professional learning series focused on strengthening mathematics instruction by building educators' number sense, fluency, and conceptual understanding. The professional learning series provides both asynchronous and synchronous opportunities for educators to build their understanding and confidence in early numeracy, which will assist educators in supporting students in their learning.

Family Support

HF 784 emphasizes meaningful family engagement in students' mathematics progress. Schools must communicate clearly, in language the family understands (both in terms of text complexity and translation), when students are not mathematically proficient, and provide families with accessible, evidence-based strategies to support mathematics development at home. This partnership ensures that families are active contributors in helping students move toward grade-level proficiency.

Recent Iowa Department of Education Efforts to Improve Mathematics

The Department has taken several critical steps to strengthen mathematics instruction and alignment across the state.

Revision of the Iowa Academic Standards for Mathematics

The 2024 revision of the Iowa Academic Standards for Mathematics provides a clear, coherent, and focused roadmap for instruction from kindergarten through high school. These standards were updated to reflect the most current research on how students learn mathematics and to align with national best practices in mathematics education.

The revised standards encourage the use of HQIMs aligned with:

- The Iowa Mathematics Shifts for Instruction: focus, coherence, and rigor.
- Deep conceptual understanding as the foundation for procedural fluency.
- Progressions of learning that build across grade levels, ensuring coherent development of number sense, algebraic thinking, geometry, measurement, data analysis, and problem-solving.
- Mathematical practices that foster problem-solving, communicating reasoning, and modeling and data analysis.

To support educators in translating these standards into effective classroom practice, the Department is creating the Iowa Comprehensive Guide to Evidence-Based Mathematics Instruction, which outlines the instructional shifts, language-rich mathematics routines (e.g., number talks, mathematical discourse), and high-leverage teaching practices (e.g., posing purposeful questions, eliciting student thinking) in support of the standards. This document serves as a practical companion to the standards, helping educators implement them with integrity and impact.

Together, the revised standards and accompanying guidance in the Iowa Comprehensive Guide to Evidence-Based Mathematics Instruction provide a shared foundation for HQIMs implementation, professional learning, and instructional improvement across the state.

Model High School Course Pathways

In today's rapidly evolving academic and professional landscapes, students must develop critical thinking and problem-solving skills that position them for long-term success. Among these foundational competencies, mastery of Algebra I content serves as a pivotal gateway. Algebra I not only lays the groundwork for advanced mathematics but also fosters the analytical reasoning skills essential for college readiness, technical education, and career pathways—including those in STEM, healthcare, manufacturing, and skilled trades.

Algebra I content supports academic growth by helping students recognize and apply mathematical relationships, thereby bridging abstract concepts with real-world problem-solving. As students progress through Algebra I, they build cognitive flexibility and critical thinking skills that support success across disciplines. Educators play a crucial role in ensuring students have early and equitable access to this foundational content—ideally by ninth grade, and where appropriate, through accelerated pathways that begin formal Algebra instruction in eighth grade.

To support schools in designing effective course progressions, the Department provides model high school course pathways that reflect multiple ways to bundle and sequence standards. These bundles offer flexible examples of how all required high school mathematics standards may be taught across a three-year sequence supporting student interest and/or postsecondary goals. Additionally, the model pathways show districts how to provide flexibility when students' interests and goals change throughout their high school years. Districts retain local control to determine how best to organize courses and tailor pathways to meet their students' needs. For example, Integrated Mathematics I, II, and III can be used in place of a traditional Algebra I–Geometry–Algebra II standards bundle sequence, so long as all students have the opportunity to learn the full breadth of Iowa's required high school mathematics standards.

In addition to meeting the core requirements, a fourth year of high school mathematics is strongly encouraged as part of students' college and career preparation. Engaging in an advanced fourth-year mathematics course offers significant benefits, including:

- Strengthened college and career readiness
- Expanded mathematical knowledge and preparation for advanced study
- Improved standardized test performance
- Development of logical reasoning and cognitive skills
- Broader access to postsecondary opportunities and career fields

Taken together, these pathways ensure all students experience a rigorous and relevant high school mathematics education that opens doors for future success. The model high school course pathways can be found in the Iowa Academic Standards for Mathematics, pages 98-99. To support local decision-making and ensure alignment with the Iowa Academic Standards for Mathematics, the Department provides SCED (School Codes for the Exchange of Data) code guidance for the model high school course pathways.

Mathematics High-Quality Instructional Materials

During the 2024-2025 school year, the Iowa Department of Administrative Services (DAS) published a request for proposals on behalf of the Department for K–12 mathematics instructional materials. The Department also supported the purchase and district-wide implementation of evidence-based curricula and HQIMs in school districts with Extended Comprehensive Support and Improvement (E-CSI) schools, which have been identified as CSI for three or more years. Please refer to the Department's Mathematics Instruction webpage for more information (Iowa Department of Education, 2024d).

The implementation of HQIMs is further reinforced through curriculum-based professional learning (CBPL), job-embedded coaching, and structured unit and lesson preparation routines. These supports are complemented by reference tools—such as the Iowa Comprehensive Guide to Evidence-Based Mathematics Instruction—which outlines instructional routines and high-leverage teaching practices aligned with Iowa's standards and the design principles of HQIMs.

By prioritizing both the strategic selection and the effective implementation of HQIMs, Iowa aims to ensure that all students have access to consistent, high-quality mathematics instruction that builds toward long-term success.

Approved Evidence-Based Professional Learning

As part of Iowa's commitment to high-quality mathematics instruction, and in accordance with HF 2612, the Department requested area education agencies (AEAs) to submit professional learning offerings for approval. The goal is to ensure consistent professional learning offerings across the state that support the implementation and continuous improvement of Iowa's strategic priorities. These offerings align with evidence-based practices and are designed to support universal instruction, intervention, and educator preparation.

Beginning July 1, 2025, AEAs may provide mathematics professional learning from the approved list to ensure quality and consistency across the state. To support district planning for the 2025–26 school year, the Department proactively conducted a rigorous review of its offerings. The list of approved professional learning is updated each year and posted on the Department website. Together, these professional learning opportunities offer a comprehensive and coherent approach to enhancing mathematics instruction across grade levels and instructional tiers. They support Iowa's broader goals of ensuring universal access to high-quality core instruction, targeted interventions, and a strong foundation in early numeracy.

Section 3: Vision of Mathematics Instruction in Iowa

Evidence-Based Mathematics Instruction

Iowa mathematics instruction is built on four interdependent components that work together as a coherent framework: Content Standards, Standards for Mathematical Practice, the Three Shifts in Mathematics Instruction, and the Effective Teaching Practices. The Content Standards define what students should know and be able to do at each grade level, organized by domains and clusters. The Standards for Mathematical Practice describe how students should engage with mathematics, encompassing eight practices that bundle into three categories: problem solving, communicating reasoning, and mathematical data analysis and modeling. HQIMs are tools that tie all of these components together and ensure evidence-based mathematics instruction in classrooms when skillfully implemented and supported.

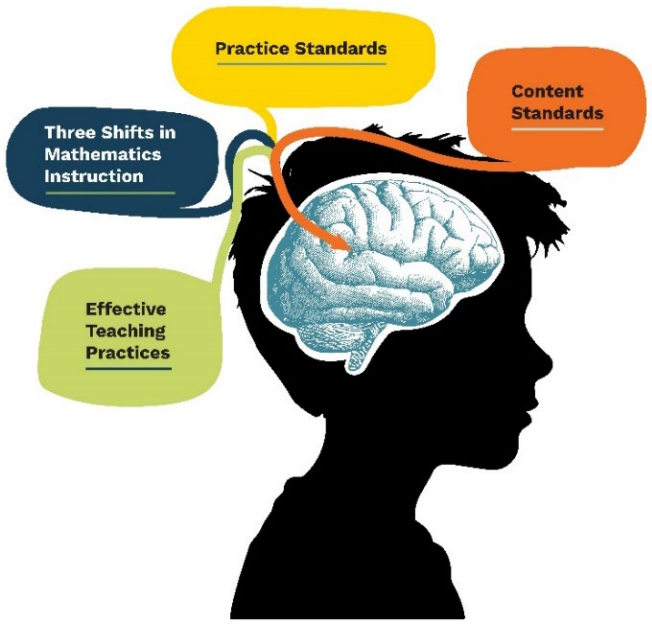


Figure 1 Four Components of Evidence-Based Mathematics Instruction

The Three Shifts – Focus, Coherence, and Rigor – provide the instructional framework for implementing the standards. Focus requires dedicating 65-85% of instructional time to the major work of each grade, ensuring students develop robust foundations in conceptual understanding, procedural skill and fluency, and real-world application. Coherence ensures that mathematics learning follows a logical progression within and across grades, with each standard building from prior learning rather than existing as an isolated skill. Rigor demands that instruction balance three equally important aspects: conceptual understanding (seeing mathematics as more than procedures), procedural skill and fluency (applying procedures efficiently, flexibly, and accurately), and application (using mathematics in real-world problem-solving contexts). These three aspects function like a three-legged stool—if any one is neglected, the foundation becomes unstable.

Evidence-based instruction is further supported by the Effective Teaching Practices from NCTM's *Principles to Actions* (2014), which translate research into classroom action: establishing clear mathematics goals, implementing tasks that promote reasoning and problem solving, using and connecting mathematical representations, facilitating meaningful discourse, posing purposeful questions, building procedural fluency

from conceptual understanding, supporting productive struggle, and eliciting and using evidence of student thinking. High-quality mathematics instruction utilizes rich problem-based tasks that help students develop understanding, emphasize connections across content areas and to real-world contexts, are accessible yet challenging to all students, allow for multiple solution pathways, and encourage engagement and communication.

Together, these components form a comprehensive, research-grounded approach to mathematics instruction that equips all Iowa students with the mathematical proficiency needed for college, career, and life success. Schools are further supported in the implementation of evidence-based mathematics instruction through the following resources: the Iowa Academic Standards for Mathematics, the Iowa Comprehensive Guide to Evidence-Based Mathematics Instruction, and the Mathematics Instruction Accessibility Practices Guide. District leaders, instructional coaches, higher education partners, and educators can use these three resources to strengthen local mathematics plans, professional learning structures, decision-making processes, and instructional coherence across grade levels.

Core Beliefs About Instruction

1. All students need to be held to high expectations through engagement with standards-aligned, grade-level material, and HQIMs can improve student achievement (Chiefs for Change, 2017).
    a. In early childhood, the emphasis is placed on learning mathematics through exploration and play.
    b. Instruction in grades K-8 prioritizes the major work of the grade, as found in the Iowa Academic Standards for Mathematics, and the intentional development of early number sense (subitizing, cardinality, object counting, verbal counting, spatial relationships, benchmark numbers, and part-part-whole models) to lay the groundwork for high school algebra readiness.
    c. Access to and success in Algebra I for all is a cornerstone of a rigorous secondary mathematics program and a key leverage point for improving graduation rates and postsecondary readiness (National Mathematics Advisory Panel (NMAP), 2008; NCTM, 2014).
2. The Strands of Mathematical Proficiency emphasize a balanced approach that prioritizes conceptual understanding, productive dispositions, strategic competence, adaptive reasoning, and procedural fluency (National Research Council, 2001).
3. Effective instruction helps improve student achievement; therefore, improving teachers' pedagogy and content knowledge is important for improving student achievement (National Mathematics Advisory, 2008).
4. Students learn mathematics best through engagement in high-quality, purposefully sequenced tasks that promote problem solving, communicating reasoning, and modeling and data analysis.
5. Job-embedded professional learning and mathematics coaching are essential for improving student achievement by empowering educators with the skills, knowledge, and ongoing support needed to implement effective, evidence-based mathematics practices. Professional learning should focus on integrating evidence-based practices with curricular content (HQIMs) (Chiefs for Change, 2017).
6. Multi-tiered systems of support in mathematics are essential to ensure that all students receive timely, data-informed instruction and intervention aligned to high-quality core instruction so that each learner's needs are addressed when they need it.
7. Mathematics-informed leaders (district- and building-level administrators) ensure alignment of curriculum, assessment, instruction, and intervention create conditions that lead to sustained student growth in mathematics (NCTM, 2014).
8. Mathematics leadership teams are essential to fostering an environment of continuous improvement and supporting mathematics achievement within schools.
9. Meaningful engagement with families and community partners ensures coherent support for learning across school, home and community environments.

Section 4: Iowa Comprehensive State Mathematics Plan

Iowa Comprehensive Mathematics Plan Logic Model

Iowa CSMP Overarching Goals

1. All students demonstrate growth and proficiency across all areas of mathematics—including number sense, algebraic thinking, geometry, measurement, data analysis, and problem-solving—from early learning through graduation, and are prepared for success in STEM fields, technical careers, and higher education.
2. Every school is staffed with effective, qualified, and well-trained educators who provide evidence-based instruction across PK–12, ensuring students build deep conceptual understanding and procedural fluency.
3. Every school implements a Multi-Tiered System of Supports (MTSS), grounded in high-quality universal instruction and informed by valid and reliable screening and progress-monitoring tools, to provide timely, targeted interventions that improve mathematics outcomes.
4. Families and communities are essential partners in the learning of mathematics. Every learning community fosters mathematical knowledge and a shared responsibility among stakeholders to enhance outcomes for all students.

Inputs

- Mathematics Legislation
- Iowa Comprehensive Mathematics Plan
- Key Partnerships
- Statewide Mathematics Leadership

Activities

- Mathematics Leadership Professional Learning
- Evidence-Based Mathematics Instruction Academies for Educators at Institutions of Higher Education
- Iowa's Mathematics and Evidence-Based Instructional Resources
- Iowa's Leadership HQIM Academy

Outputs

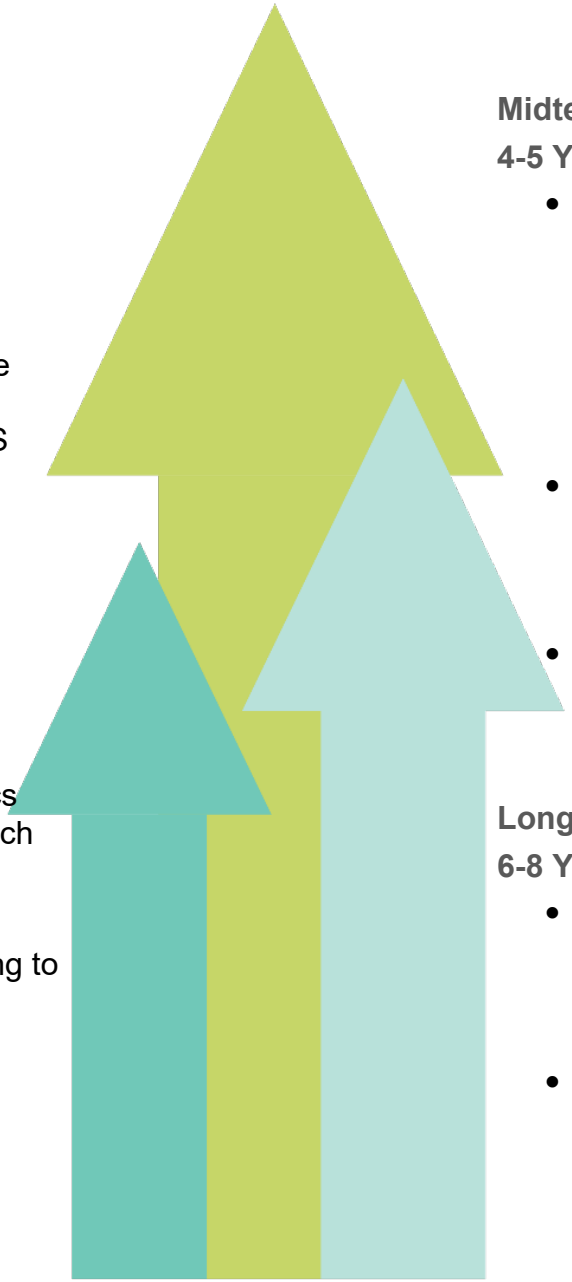
- Improved student achievement, including higher proficiency rates and accelerated growth
- Align higher education syllabi with evidence-based mathematics instruction and instruction of pre-service mathematics educators in implementing these practices
- Increased number of people, schools, and school districts using professional learning, technical support, webinars and other state-provided resources
- Local mathematics plans aligned with the state plan

Iowa Comprehensive State Mathematics Plan Outcomes

Short Term Outcomes

1-3 Years

- School districts develop Mathematics Leadership Teams with key leadership of building principals.
- School districts complete a comprehensive needs assessment around mathematics aligned with the Self-Assessment of MTSS Implementation (SAMI).
- School districts develop high-quality mathematics plans aligned with the Iowa CSMP and include Evidence-Based Practices.
- School districts adopt HQIMs.
- School districts develop coherent and comprehensive MTSS around mathematics for all students and tiers of instruction, which include data-driven decision-making.
- Leaders and practitioners engage in high-quality, job-embedded professional learning to increase knowledge and skills around Evidence-Based Mathematics Instruction.



Midterm Outcomes

4-5 Years

- Leaders and practitioners continue to engage in high-quality, job-embedded professional learning to increase knowledge and skills around Evidence-Based Mathematics Instruction and refine their instructional practices through collaborative systems and structures.
- School districts and educators implement HQIMs with integrity and integrate evidence-based mathematics practices aligned with their local mathematics plans.
- Student growth in mathematics, based on assessment data (fall to spring), increases from year to year for all educationally disadvantaged student groups.

Long Term Outcomes

6-8 Years

- Achievement gaps in mathematics close to within 10% for all educationally disadvantaged student groups based on Iowa state assessment data
- Achievement for all students increases by 5% on the ISASP mathematics assessment.

Iowa Comprehensive Mathematics System Framework

The Iowa Comprehensive Mathematics System Framework illustrates the relationship between all district processes and components that must work together to support a strong mathematics program and meet the four goals of the Iowa CSMP. Universal mathematics instruction for all students within a MTSS is grounded in the belief that every learner is capable of deep mathematical thinking and success when provided with high-quality instruction, high expectations, and timely targeted support. At the core of the mathematics framework is the use of high-quality, standards-aligned instructional materials that promote conceptual understanding, procedural fluency, and real-world application through a coherent, vertically articulated mathematics curriculum. High expectations for all students guide instruction, ensuring that every learner engages in grade-level mathematics with appropriate support and opportunity to persevere. Students participate in carefully sequenced mathematical tasks that promote reasoning and problem solving, consistent with the Effective Teaching Practices outlined in *Principles to Actions*. Teachers use evidence-based instructional practices and daily opportunities for discourse, feedback, and reflection to strengthen student understanding provided within their HQIMs. A comprehensive quality assessment system supports mathematical learning and instructional decision-making through universal screening, formative assessments, diagnostic measures, and progress monitoring. In alignment with *Principles to Actions*, assessment is viewed as a tool for learning, not simply of learning, and is used to gather actionable evidence of student understanding. Data is analyzed collaboratively to inform instructional adjustments, strengthen universal instruction, and identify students in need of supplemental, targeted, or intensive tiers of instruction – including remediation and enrichment.

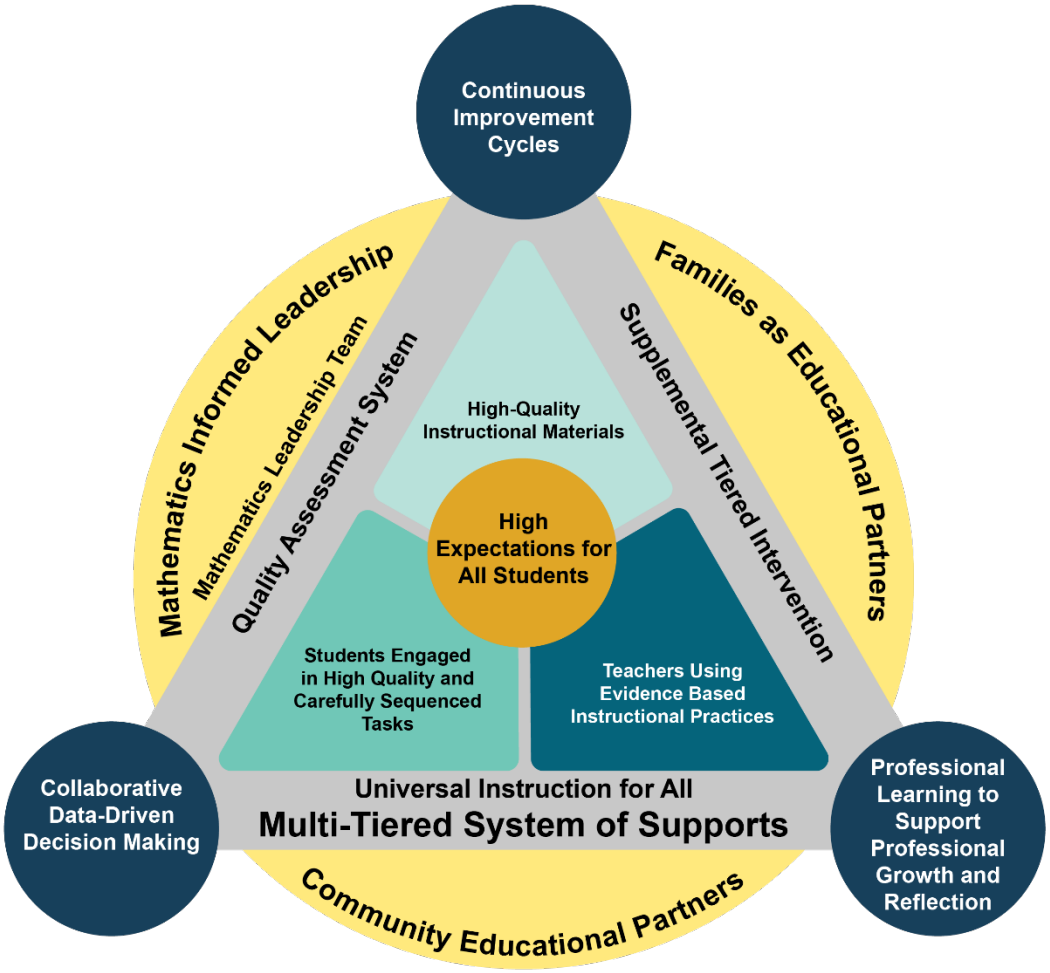


Figure 2 Iowa Comprehensive Mathematics System Framework

Mathematics-informed leadership establishes a clear vision for effective mathematics instruction. Leaders prioritize access, coherence, and consistency across classrooms; protect instructional time for mathematics; ensure fidelity to high-quality curriculum and instructional practices; and allocate resources for intervention and professional learning. The mathematics leadership team monitors student outcomes, implementation fidelity, and instructional effectiveness to guide improvement efforts. Data teams analyze assessment information collaboratively to refine universal instruction and determine when supplemental, targeted, or intensive tiers of instruction are needed.

Families are essential partners in learning mathematics. Schools intentionally support families through clear communication, accessible resources, and opportunities to engage in mathematics at home. Community organizations and educational partners further enrich student learning through extended learning opportunities, STEM partnerships, and career-connected experiences that reinforce the relevance and application of mathematics beyond the classroom.

All components of the system are strengthened through collaborative, data-driven decision making, with professional learning communities routinely analyzing multiple sources of student data to evaluate instructional effectiveness and intervention impact. Ongoing, job-embedded professional learning supports teacher growth, instructional coherence, and evidence-based mathematics practice, with an emphasis on deepening mathematical content knowledge and refining the Effective Teaching Practices described in *Principles to Actions* (NCTM, 2014). The framework operates within a continuous improvement cycle that evaluates curriculum, strengthens instruction, refines assessment practices, and improves outcomes for all students in mathematics.

Iowa Comprehensive State Mathematics Plan Recommendations

Iowa's approach to mathematics improvement is built on the Iowa Mathematics Systems Framework, focusing on mathematics-informed leadership (Goal #2), MTSS (Goal #3), high-quality instruction and materials (Goal #1), and family and community engagement (Goal #4). Professional learning and teacher preparation (Goal #2) are woven throughout the focus areas, ensuring educators have the knowledge, skill, and resources to support every student's mathematical growth. The following sections provide an overview of each focus area with recommendations for districts to implement, as well as resources provided by the Department to support implementation. This framework guides both state-level support and district-level implementation over the timeline of this plan.

Note: The professional learning and teacher preparation recommendations are threaded throughout the other four focus areas and are indicated within the recommendation callouts as follows: **Professional Learning.**

Informed Leadership

Effective leadership is foundational to the success of mathematics initiatives. Mathematics-informed leaders at all levels, from superintendents to principals, are equipped with knowledge and strategies to support high-quality mathematics instruction. Their leadership guides schools to adopt evidence-based practices and promotes accountability, collaboration, and continuous improvement across districts and schools. Among these leaders, principals hold a particularly significant position. Principals are second only to teachers in their impact on student achievement, highlighting their critical role in shaping mathematics instruction, fostering professional learning, and ensuring that mathematics initiatives are sustained over time (Fullan & Pinchot, 2018; Grissom et al., 2021; Leithwood & Mascall, 2008).

The Comprehensive State Mathematics Plan recommends key strategies to support and grow a mathematics-informed leadership. The first strategy is the formation of the Mathematics Leadership Teams (MLTs), which serve as a structured approach to collaborative mathematics leadership (Leithwood & Mascall, 2008). To ensure targeted and effective mathematics leadership, schools and districts must engage in the Comprehensive Mathematics Needs Assessment. This assessment will help leadership teams in uncovering mathematics instructional strengths and weaknesses, professional learning needs, and intervention effectiveness. Following the needs assessment, schools should

develop a Mathematics Plan outlining clear, measurable goals for mathematics improvement, along with a clear set of action steps.

Recommendations

1. Strengthen the mathematics knowledge of superintendents and school administrators through professional learning experiences.
    - Review the Iowa Academic Standards for Mathematics recordings and content to support the implementation of the revised 2024 Standards for Mathematics.
    - Attend the Flexibility Formula training.
    - Utilize the state resources, such as the Iowa Mathematics Teacher Preparation Workbook.
    - Utilize national resources such as the NCSM Essential Actions: Framework for Leadership in Mathematics Education.
2. Establish district and/or school-level Mathematics Leadership Team (MLT).
    - **Professional learning |** Identify key mathematics learning resources to explore and study as a team.
    - **Professional learning |** Develop a set of resources and curriculum-based professional learning (CBPL) to support teacher learning.
3. Complete a Comprehensive Mathematics Needs Assessment of the current system (aligned with district SAMI results), including instruction in mathematics courses and interventions, including instructional materials and MTSS plans.
4. Develop a five- to eight-year Local Mathematics Plan.

State Resources

1. Guide for developing Local Mathematics Leadership Teams (To Be Developed - TBD)
2. Comprehensive Mathematics Needs Assessment Template that coincides with the SAMI (TBD)
3. Local mathematics plan templates (TBD)
4. Mathematics HQIMs Leadership Academy
5. Monthly publication of Mathematics Update: The Only Subject That Counts

High Quality Instruction and Materials

A strong MTSS begins with effective Tier 1 (Clark et al., 2014; Fuchs et al., 2012) anchored in the use of HQIMs aligned to the Iowa Academic Standards for Mathematics, the standards for mathematical practice and the effective teaching practices. HQIMs in mathematics focuses on the instructional shifts reflected in the standards, building conceptual understanding alongside procedural fluency and application, promoting student reasoning, and connecting learning across grade levels. HQIMs includes language-rich mathematics routines (e.g., number talks, sentence frames, and structured discourse) that support students in explaining their thinking, using precise vocabulary, and engaging in mathematical argument. They build students' mathematical skills over the school year and vertically across grades.

Recommendations

1. Strengthen universal instruction by integrating high-leverage, evidence-based practices across all levels of instruction from PK-12.
2. Select and adopt HQIMs for mathematics aligned with:
    a. Three shifts in mathematics instruction
    b. Iowa's Academic Standards for Mathematics
    c. Effective Mathematics Teaching Practices (NCTM, 2014)
    d. Mathematical Language Routines and High-Level Practices to support ELs and students with disabilities
3. Implement HQIMs with integrity.

4. Engage in regular data-based decision-making conversations to analyze the impact of the universal materials and instruction.
5. Develop a pathway that allows students early access to Algebra 1 content.
6. Develop high school mathematics pathways that ensure all students have the opportunity to learn all required standards (Algebra 1 standards bundle, Geometry standards bundle, and Algebra II standards bundle).
7. **Professional Learning |** Ensure that learning communities are in place to provide educators with collaborative structures for engaging in continuous improvement conversations around new materials, curriculum, lesson plans, and student work.
8. **Professional Learning |** Provide curriculum-based coaching for educators.

State Resources

1. Provide stakeholders with an evidence-based instructional practices and routines guide for mathematics (TBD).
2. Provide stakeholders with HQIMs review tools and rubrics (TBD).
3. Provide stakeholders with the Iowa Academic Standards for Mathematics.
4. Provide stakeholders with a revision of the Iowa Early Learning Standards, which includes mathematics (TBD).
5. Provide districts with Iowa's Universal Tier Guide via the Department's ESSA website, Universal Instruction page and corresponding professional learning modules, which include:
    a. Support for planning, organizing, and leading MTSS and the Continuous Improvement Process (CIP).
    b. Professional Learning | Iowa's just-in-time learning, professional learning cycle, unit planning, lesson planning, scaffolding unfinished learning.
6. Iowa Model High School Course Pathways
7. **Professional Learning |** Provide K-6 Early Numeracy professional learning, The Flexibility Formula.
8. **Professional Learning |** Develop high-quality curriculum-based professional learning resources for grades K-12.

Multi-Tiered System of Supports

MTSS offers a proactive, data-driven framework for delivering mathematics instruction and interventions with increasing levels of intensity.

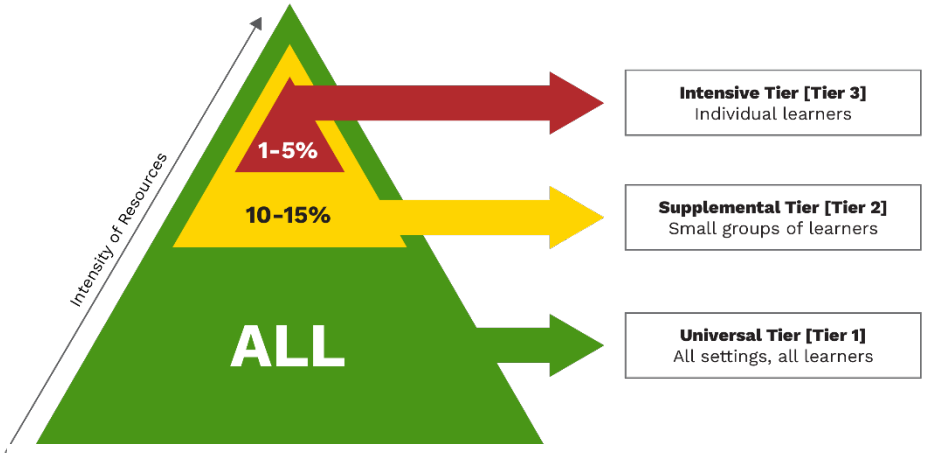


Figure 3 Multi-Tiered System of Supports

Multi-Tiered System of Supports
Academics and Behavioral Health

At its core, MTSS begins with Tier 1, where all students receive intense, differentiated, grade-level instruction using HQIMs aligned to the Iowa Academic Standards. Standards-aligned learning targets, common formative and summative assessments, evidence-based instructional strategies, and aligned professional learning help educators strengthen Tier 1 practices.

For students not meeting benchmarks, Tier 2 offers targeted small-group interventions aligned with Tier 1 instruction and grounded in research-based strategies, including, but not limited to, explicit

instruction. Teachers use progress-monitoring data to adjust their instruction, ensuring interventions are responsive to students' needs. Educators are encouraged to utilize resources and practices from approved professional learning opportunities to guide diagnostic assessment and design

targeted interventions. Tier 2 can also extend learning for students who show early proficiency. Students requiring additional support move into Tier 3, where they receive intensive, individualized instruction. As students move through the tiers, rigor should not decrease; instead, educators provide scaffolded entry points to grade-level content while backfilling prerequisite skills, giving students the additional time and practice needed to succeed.

Recommendations

Assessment and Data-Based Decision Making

1. Administer a universal screener three times a year. Grades K-6 must select from the approved list.
2. Identify and implement diagnostic assessments to support the more supplemental, targeted, and intensive tiers of instruction.
3. Implement an assessment or system of assessments for monitoring student growth and progress on supplemental, targeted, and intensive tiers of instruction.
4. Use formative assessments to make day-to-day instructional decisions.
5. Develop curriculum-based and/or standards-aligned assessments to measure students' grade-level performance.
6. Ensure that learning communities are in place to engage in data-based discussions and decision-making.

Supplemental, Targeted, and Intensive Tiers

1. Prioritize time within school schedules to support supplemental, targeted, and intensive tiers.
2. Ensure that district and school budgets allow for hiring mathematics specialists and interventionists.
3. Use data-based decision-making to determine the level of intensity needed for student placement in interventions.
4. Ensure that evidence-based materials are utilized for all levels of instruction.
5. Align instruction and evidence-based practices across all levels of instruction.
6. Monitor student progress frequently to assess intervention effectiveness.
7. Base decisions for student instructional support on demonstrated growth.
8. Utilize Personalized Mathematics Plans with students who are identified as persistently at risk in mathematics.

State Resources

Assessment and Data-Based Decision Making

1. Approved Universal Screener and Progress Monitoring Tools list.
2. Preschool MTSS Support Materials (TBD).
3. Central location for district and school data: Iowa School Performance Profiles (ISPP).
4. Iowa's Panorama Student Success to be used for an MTSS data platform.
5. Every Student Succeeds Act: Iowa School Performance Profile Data Review Guide. This data review guide supports schools in the annual review and analysis of ISPP data. It provides basic steps and guiding questions to support teams in review and initial interpretation.
6. ESSA Data Review for Designated Schools online learning module that can be used to support the data review process.

Supplemental, Targeted, and Intensive Tiers

1. Provide an MTSS Supplemental and Intensive Tier Guide.

2. Provide guidance and tools for intervention materials adoption (TBD).
3. Provide Model Personalized Mathematics Plans.
4. Preschool MTSS Support Materials (TBD).

Family and Community Engagement

Family engagement plays a pivotal role in student success, particularly in mathematics. Research shows that when families are well-informed and supported in engaging with their child's mathematics learning, students experience improved achievement, confidence, and motivation (Wang & Wei, 2024). In response, HF 784 requires the development and distribution of resources that empower families to participate meaningfully in their children's mathematics education. Effective mathematics education extends beyond the classroom and family, drawing strength from active partnerships with the broader community. Research has shown that schools implementing subject-specific community involvement activities see measurable gains in student mathematics proficiency, particularly when these efforts are sustained and designed for meaningful interaction among students, families, and community partners (Sheldon & Epstein, 2005).

Recommendations

1. Partner with Early Childhood Iowa, Head Start, and other local educational and community organizations to complete the following:
    a. Collaboratively, create a vision for family and community partnerships as part of your local mathematics plan from PK-12.
    b. Identify responsible parties for leading the work.
    c. Budget and plan for continuous progress monitoring, adjustments, and financial success.
2. Engage in the development and implementation of the Personalized Mathematics Plan for students not proficient in mathematics. Communicate student progress throughout the school year.
3. Provide families with multilingual mathematics resources, newsletters, instructional videos, and tips on supporting mathematics at home. Ensure that these resources are accessible to help families understand how they can play an active role in their child's mathematical development. Consider creating a digital hub with easy-to-access resources and information in multiple languages.
4. Celebrate mathematical excellence through participation in the National Math Stars Program.

State Resources

1. Math Moments that Matter, a set of grade-level family pages, schools are encouraged to share with families for grades K-6.
2. A menu of resources for schools to use to engage families in supporting mathematics (TBD).
3. Family and Community Mathematics Partnership Guide (TBD).
4. An annual list of students who qualify to apply for the National Math Stars program.

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