TO:	Members of the State Board of Education Policy Committee
FROM:	Carey M. Wright, Ed.D., State Superintendent of Schools
DATE:	March 13, 2025
SUBJECT:	PreK-12 Mathematics Policy Version 2

Purpose

The State Board of Education reviewed the draft PreK- 12 Mathematics Policy at the January Board meeting and provided initial feedback. Version 2 of the Mathematics Policy is updated, accounting for stakeholder feedback collected throughout February 2025, including updates related to accelerated mathematics courses, instructional practices for students with disabilities, and terminology and timeline clarification. MSDE remains committed to revising the policy to meet the collective goal of improving student mathematics outcomes in Maryland.

Background

The PreK-12 Maryland Mathematics Policy is a strategic initiative designed to transform mathematics teaching, learning, and achievement from early childhood through secondary education. This policy supports the foundational goals of The Blueprint for Maryland's Future by ensuring that all students, regardless of background, have equitable access to a coherent and high-quality mathematics education. The policy includes recommendations to implement a structured mathematics program that develops students' conceptual understanding and fluency in mathematical concepts, skills, and strategies. By aligning teaching and learning practices with these goals, the policy aims to prepare students to apply mathematical knowledge in real-world contexts, enhancing their readiness for daily life, higher education, and future careers.

Executive Summary

Provide updated information to the State Board of Education Policy Committee on Version 2 of the PreK-12 Mathematics Policy.

Action

Request for adoption of the Maryland PreK-12 Mathematics Policy

Attachments

MathPolicyVersion2- March25.docx

Math Policy Revisions for Policy Committee_March 25.pptx

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Version 2

PreK- 12 Mathematics Policy

Mathematics Branch

Office of Teaching and Learning Instructional Programs & Services

March 2025

MARYLAND STATE DEPARTMENT OF EDUCATION

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Acknowledgements

A sincere appreciation is offered to the following individuals who contributed time and expertise to develop this policy. Their contribution will serve the Maryland State Department of Education and the state's local education agencies in their collaborative efforts to enhance mathematics instruction for students, promote access to resources, and ensure the successful implementation of the Mathematics Policy across Maryland. 2025 Version MSDE Contributors include:

OFFICE OF TEACHING AND LEARNING INSTRUCTIONAL PROGRAMS AND SERVICES

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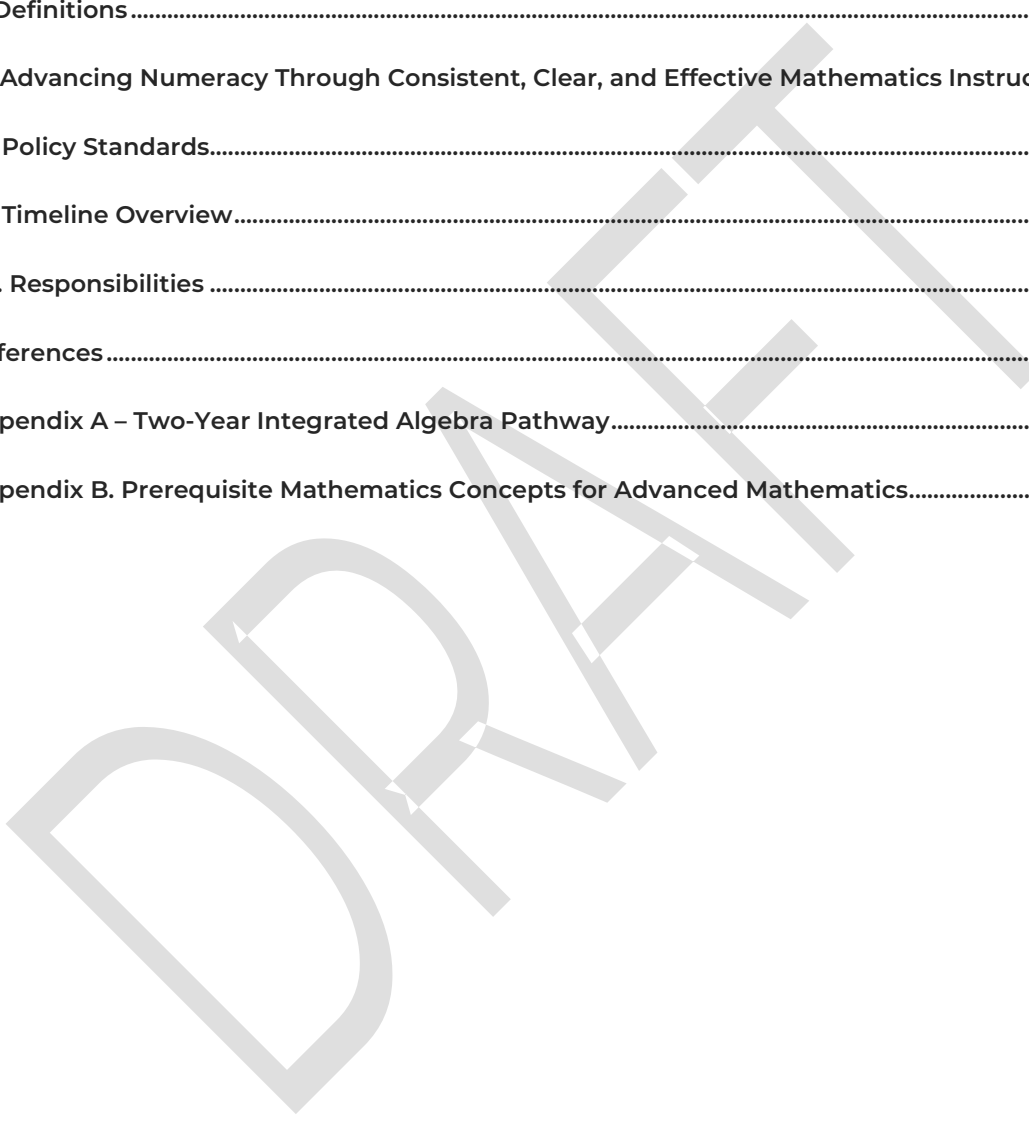**Stacie Marvin, NBCT**, Coordinator of Mathematics

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Math Policy Engagement and Feedback Process

Timeline	Activity
January 28, 2025	• Version 1 of Maryland PreK-12 Math Policy presented to State Board of Education • State Board of Education shares initial reactions
January 28, 2025- ongoing	• MSDE Mathematics Branch individually responds to community stakeholder feedback shared with the agency by phone or email
February 4- 24, 2025	• Version 1 of Maryland PreK-12 Math Policy posted on MSDE Mathematics Branch website for public feedback.
February 13, 2025	• Version 1 of Maryland PreK-12 Math Policy presented to State Board of Education Policy Committee for information and detailed feedback
February 13 & 14, 2025	• MSDE hosts LEA Leadership Math Policy Feedback Sessions
February 25, 2025	• State Board hosts public hearing
Throughout March 2025	• MSDE shares resources to support the policy (as requested by LEA Leadership)
March 11, 2025	• Maryland Launch Years Task Force and Mathematics Standards & Framework Validation Committee joint meeting (focus on progression of PreK- Integrated Algebra 2 math standards)
March 13, 2025	• MSDE releases Summary of Public comment and Revised Maryland PreK-12 Math Policy • Revised Maryland PreK-12 Math Policy presented to State Board of Education Policy Committee for final review before adoption
March 14, 2025	• Pi Day LEA Leadership film screening/ Maryland Math Policy discussion • Pi Day Community film screening/ Maryland Math Policy discussion
March 20, 2025	• Math Policy Full Day Deep Dive at LEA Math Supervisor Collaborative
March 25, 2025	• Revised Maryland PreK-12 Math Policy presented to State Board of Education for adoption

I. Purpose

The PreK- 12 Maryland Mathematics Policy is designed to catalyze significant improvements to teaching, learning, and achievement in mathematics from early childhood through secondary grades across Maryland.

This policy aligns with and advances the foundational goals of The Blueprint for Maryland's Future by prioritizing equitable access to rigorous, relevant, high-quality mathematics education for all students in grades PreK through 12. This policy outlines recommendations for implementation of a coherent math program and support structure that guides students' mathematical development from early childhood through high school. Herein, we focus teaching and learning in mathematics to ensure that students can both conceptually understand and fluently apply math concepts, skills, and strategies. Thus, students will be positioned to further extend these experiences beyond the classroom and apply mathematical skills to their daily lives and future aspirations.

According to data from the 2024 administration of NAEP, 37% of 4th-grade students in Maryland scored at or above proficiency in math, in comparison to 39% of students nationally. Data from the 2024 NAEP administration showed that 25% of Maryland 8th graders scored at or above proficient in math, compared to 27% of students nationally. Historically, Maryland students have exceeded the national proficiency rate in grades 4 and 8, but in recent years, this trend has shifted. Additionally, in 2024, data from Maryland's state assessment, the Mathematics Maryland Comprehensive Assessment Program (MCAP), revealed that student outcomes improved from School Year 2022-2023 across all grade levels, but have not returned to pre-pandemic performance outcomes and remain below Maryland's expectations for student mathematical proficiency.

Acknowledging these challenges with student achievement in mathematics across the state, this policy extends a deep commitment to instructional equity, access, and opportunity. The Maryland State Department of Education (MSDE) and the Maryland State Board of Education are committed to building comprehensive systems of support to ensure that all students receive responsive support when they need it. These systems must include meaningful daily, on-grade-level, standard aligned instruction and access to intervention and acceleration which will support student success from Prekindergarten through secondary mathematics pathways for all students across Maryland.

Central to this policy is a redesign of the core secondary mathematics sequence to ensure that all students are mathematically college and career ready by the end of 10th grade and have multiple pathways and opportunities to explore rigorous mathematics content thereafter. This readiness equips all students to successfully pursue a diverse range of secondary mathematics pathways, tailored to their interests and future goals. Fundamentally, secondary mathematics success is built on a strong foundation of numeracy in the early and intermediate grades and the development of algebraic thinking and abstraction in the middle grades (SAP, 2021; Siegler et al., 2012).

In addition, the policy acknowledges the historical barriers to high-quality math experiences that exclusionary tracking creates, particularly for historically marginalized student groups (Francis & Darity, 2021; Irizarry, 2021; NCTM, 2018). It therefore is explicit about moving away from exclusionary tracking

and creating structures that create authentic opportunities for all students to engage in advanced math throughout the PreK-12 progression.

Key policy recommendations also include the development and implementation of ongoing, job-embedded professional learning opportunities for all educators that promote effective teaching practices, implementation of standard-aligned instruction, and data-driven pedagogical approaches. Policy implementation will be monitored through the establishment of systemized, grade-level standards aligned assessments across Local Education Agencies (LEAs). These assessments will evaluate students' progress in defined areas of numeracy development and will enable consistent progress monitoring and support the strategic analysis of student-level data. LEAs will also review and respond to annual student data aligned to equitable access and student outcomes in advanced mathematics. To support implementation, MSDE and LEAs will collectively launch initiatives to involve and support families, communities, and local organizations in mathematics education through regular forums and workshops across the state.

The policy's key strategic recommendations were developed through collaboration with the PreK-12 and higher education math community, including the Charles A. Dana Center Launch Years Initiative. To align recommendations with local context, community feedback played an important role in shaping these policy recommendations.

II. Definitions

Throughout this policy, several key terms are used. The following section defines these terms as they are intended within the context of this policy's development.

A. **Acceleration** refers to providing students with access to mathematics content standards and instruction beyond their current grade level. It can occur at any grade and is based on demonstrated mastery of core content.

B. **Equitable Access** ensures that all students, particularly those from socio-economically disadvantaged and underserved groups, students with disabilities, and Multilingual Learners (ML), receive the support, resources, and opportunities they need to succeed in mathematics. Unlike *equal* opportunity, which treats all students the same, *equitable access* requires a deliberate and intentional approach that addresses historical and systemic barriers to participation in advanced mathematics (DiME, 2007; Leonard, 2009). *Equitable access focuses on ensuring that students who have been historically excluded are intentionally included in mathematics pathways and acceleration opportunities, with structures in place to support their success.*

C. **Equitable Teaching Practices** ensure that all students have meaningful engagement with standards aligned content. These practices are intentional and responsive and provide differentiated support and attention to uplift students who might otherwise become disengaged. By tailoring support to individual needs and focusing on building conceptual understanding rather than relying on rote procedures to support all students, equitable teaching helps remove barriers to learning, fosters a sense of belonging in mathematics, and cultivates the ability to apply mathematical ideas in new contexts (NCTM, 2018).

D. **Exclusionary Tracking** refers to the practice of placing students into rigid learning tracks, often arbitrary and based on assumptions about their abilities, which limits their future opportunities in mathematics (NCTM, 2018; Oakes, 2005; Oakes & Guiton, 1995).

E. **Flexible grouping** refers to student groups based on readiness and interest, with grouping decisions made frequently—by lesson, topic, unit, or even the modality of task engagement. Flexible groups can include homogeneous or heterogenous groupings for students developing skills on a targeted concept.

F. **Integrated Algebra** refers to the intentional integration of algebra, geometry, and statistics to showcase their interconnected nature for a cohesive and deeper understanding of mathematics. With this approach, students are provided opportunities to use different areas of math (algebra, geometry, statistics) as a lens through which they develop a more holistic understanding of concepts traditionally taught in isolation. For example, students can explore concepts like quadratic relationships not only through the lens of algebra but also by analyzing their graphical

representations in geometry and modeling real-world data in statistics. *See Appendix A for an overview of Integrated Algebra 1 & 2 course content.*

G. **Secondary Mathematics Pathways** include mathematics courses that support students in building a unique, tailored path to mathematical college and career readiness. These pathways, starting no later than grade 11, are aligned with students' goals and interests and increase the relevance of secondary mathematics by acknowledging student autonomy in choosing their own mathematical path. Pathway options include Quantitative Reasoning, Data and Data Analytics, Algebraic Foundations of Calculus, and Statistics and Probability.

III. Advancing Numeracy Through Consistent, Clear, and Effective Mathematics Instruction

A. This policy is grounded in the commitment to provide every student with meaningful math experiences that emphasize the development of numeracy.

B. The development of numeracy is supported by mathematics instruction that is both intentional and visible (Hattie et al., 2017) across Tiers I, II, and III. When implemented strategically and systematically, effective mathematics instruction guides students' development of conceptual understanding and procedural fluency, also ensuring that clearly defined processes and goals are transparently communicated. This visible mathematics instruction is grounded in the following principles (NMAP, 2008):

   1. Teachers set and communicate clear learning goals to ensure students understand the purpose and focus of their learning and what success looks like.
   2. Teachers provide clear models for strategically solving problems with a series of examples.
   3. Teachers actively make connections to prior mathematical knowledge, skills, or experiences to promote internalization of new concepts and support students' learning progression.
   4. Students are provided with extensive opportunities to practice new skills in a variety of contexts, with deliberate connections made to prior mathematical knowledge.
   5. Students are provided space to discuss their approaches with their peers and teachers.
   6. Teachers consistently provide timely and specific feedback to guide the mathematics learning progression.

C. Students demonstrate mathematical proficiency by jointly developing conceptual understanding of and procedural fluency with mathematical concepts, that then can be applied to various problem-solving contexts (NMAP, 2008).

   1. Concepts are to be introduced and developed through an appropriate balance of the concrete, semi-concrete or representational, and abstract approach.
   2. Instruction should lead students to develop flexible, accurate, and efficient application of mathematical strategies, including the informed use of standard algorithms.
   3. Students should develop automaticity, that is the ability to recall facts quickly, accurately, and with little effort, in order to lighten cognitive load and enable more complex problem solving.

D. The pathway to college and career numeracy develops within four interconnected content domains as students' progress from early elementary to secondary mathematics learning experiences. Each domain reflects a developmental progression from fundamental concepts in early grades to advanced skills in high school, and provides students with a multidimensional understanding of numerical and algebraic relationships, spatial awareness and geometric modeling capabilities, proficient data literacy and critical statistical reasoning skills:

1. Number and Operational Sense - Early numeracy development begins with foundational skills in counting, place value, and basic operations which provide the foundation for proportional reasoning. As students progress through their understanding of whole numbers, fractions, decimals, ratios, and percentages, they build fluency in interpreting and manipulating numerical information. This developmental trajectory enables students to recognize and make use of structure, attend to precision, and reason flexibly about numerical relationships, including proportionality.

2. Algebraic Reasoning - The progression of algebraic thinking starts with identifying and analyzing patterns to create mathematical models. Students advance from early pattern recognition to exploring functions (e.g., linear, exponential, and quadratic) and developing symbolic representations to model mathematical phenomena. As they deepen their algebraic thinking, they learn to algebraically express regularity in repeated reasoning, construct viable arguments, and critique the algebraic reasoning of others as they solve authentic problems in collaborative spaces.

3. Geometric Reasoning - Development in geometrical reasoning begins with recognizing shapes, symmetry, and measurement concepts. Over time, students expand their spatial awareness to include transformations, trigonometry, and spatial modeling. As they progress, students engage in conjecture, reasoning inductively and deductively, and verifying their conclusions. They learn to use multiple representations to analyze and reason about spatial phenomena and apply these skills to solve both abstract and practical problems.

4. Reasoning with Data and Statistics - The ability to reason with data and statistics develops as students move from organizing and interpreting information to engaging with variability, probability, and uncertainty. As they progress, they develop statistical models, analyze patterns, and question data sources critically. This growth includes using tools and technology to synthesize information and communicate findings effectively. By the time they reach advanced levels, students are prepared to apply data-driven decision making in complex, real-world contexts.

E. Students' attitudes toward math, tied to their math identity, need consistent support throughout their learning journey. To build positive math identities, instruction should include opportunities for mathematical modeling and reasoning, exploring connections between ideas, and strengthening reasoning skills through productive struggle and collaboration. Additionally, students should have experiences that help them see themselves as capable mathematicians, develop a sense of belonging in the mathematics classroom, and recognize the relevance of mathematics in their lives and communities (Aguirre, et al., 2013).

IV. Policy Standards

A. ACCESS AND EQUITABLE MATHEMATICS OPPORTUNITIES

1. By School Year (SY) 2026-2027, LEAs must implement a Multi-Tiered System of Supports (MTSS) for mathematics instruction to provide responsive, differentiated support that meets the needs of all students, including those requiring intervention, enrichment, or acceleration.

    a. MTSS ensures real-time, evidence-based support aligned with grade-level standards, structured across three tiers:

        i. **Tier I:** High-quality, differentiated instruction in the classroom by licensed math teachers using grade-level, standards aligned curricular resources. Tier I instruction is designed for all students and incorporates Universal Design for Learning (UDL) principles to provide scaffolding for students who need additional support, enrichment for advanced learners, and an inclusive learning environment that fosters confidence and reduces math anxiety.

        ii. **Tier II:** Small-group instruction for students needing additional support beyond Tier I. This instruction reinforces core content, builds prerequisite skills necessary for grade-level success, and provides opportunities for deeper engagement with mathematical concepts for students who would benefit from content extension.

        iii. **Tier III:** Intensive, individualized support for students with significant learning needs or those requiring an accelerated progression. This includes tailored interventions, foundational skill development, and mentoring for emotional growth and confidence.

    b. School-based structures and schedules for MTSS must be designed to facilitate the consistent implementation of Tier II and Tier III instruction without disrupting Tier I instructional blocks.

    c. School and district leaders should prioritize MTSS in mathematics to enhance student proficiency by the end of elementary school. Further details will be in MSDE's MTSS Framework.

    d. MTSS is a framework for providing tiered support, not a system for categorizing students into fixed tiers. Schools must regularly review student progress and ensure that movement between levels of support occurs dynamically. Support should be adjusted at the content module level (e.g., unit, topic, or instructional cycle), but at a minimum, student progress must be reviewed, and support must be refined after each end-of-unit summative assessment.

    e. LEAs must develop and implement protocols for identifying and supporting students who have not reached proficiency in number and operation, algebraic thinking, geometrical reasoning, and reasoning with data and statistics as identified in MSDE's Numeracy Development Framework.

2. Beginning in SY 2025-2026, LEAs shall review all scheduling policies and practices to reduce or eliminate exclusionary tracking in mathematics education and ensure students are purposefully grouped in classrooms where all students have access to effective mathematics instruction and robust support within a formal MTSS structure. School schedules must reflect the belief that all students are capable of learning and doing mathematics.

3. By SY 2026-2027, school schedules should be aligned to the MTSS expectations and the expectations below:
    a. In early grades PreK-1, schools must maintain heterogenous mathematics classrooms. Flexible grouping should be utilized to support and enrich student learning.
    b. In elementary grades 2-5, schools are strongly encouraged to maintain heterogeneous mathematics classrooms and should regularly regroup students based on LEA developed MTSS math structures.
    c. In middle grades 6-8, schools must provide math intervention courses for students who demonstrate the need for additional support. In alignment with MTSS, intervention course scheduling should be flexible and allow students to transition in and out of support courses throughout the school year.
    d. In high school (grades 9-12), schools must provide access to a variety of secondary mathematics pathways that align with different career and academic interests.
    e. Students who demonstrate challenges with mathematics content should always remain enrolled in mathematics courses aligned to grade-level standards in addition to appropriate co-requisite support courses when warranted (Alexander et al., 2003; Fong et al., 2014; Logue et al., 2019).

4. Beginning in SY 2026-2027, LEAs shall develop a process to identify and support students who exhibit difficulties with learning mathematics, including students with disabilities. To support their numeracy development, identified students shall receive supplemental instruction aligned to their identified needs through MTSS which include:
    a. Explicit and systematic instruction that prioritizes the use of mathematical language, manipulatives, visual representations (including number lines), word problem structures, and dedicated time for developing fact fluency;
    b. A proactive, school-wide framework for supporting and increasing academic, behavioral, and social emotional outcomes for all students with areas of concern;
    c. Program-specific monitoring tools that LEAs should use to collect and analyze intervention data to make instructional decisions;
    d. All mathematics learning goals in student Individualized Education Programs should be reviewed annually to ensure alignment with core grade level content and student numeracy development;
    e. Math-specific language goals that are clearly defined to support Multilingual Learners in developing the academic vocabulary, reasoning skills, and communication strategies necessary for full engagement with mathematics. These goals should be intentionally integrated into instruction, with ongoing scaffolds and progress monitoring.

5. Beginning SY 2027-2028, LEAs shall adhere to a minimum daily requirement of 60 instructional minutes for all math courses in Kindergarten through grade 8. Exemplar schedule models aligned to MTSS will be provided in guidance.

6. Beginning in SY 2026- 2027, all LEAs must develop and implement an accelerated mathematics course progression that is an evidence-based, continuous process that provides students with multiple opportunities to advance in mathematics based on readiness and interest. Acceleration decisions should:
   a. Be data-driven, flexible, and equitable,
   b. Use a multi-tiered approach that includes in-class opportunities, and
   c. Support individual student needs.
7. All students entering grades 3-7 should be evaluated for math acceleration readiness at least once a school year based on multiple data points identified by each LEA.
   a. Beginning in grade 3, every school must offer an accelerated mathematics course progression that allows access to Integrated Algebra 1 by grade 8 for students who demonstrate readiness. Progressions must ensure students receive instruction or demonstrate mastery in all core content for each grade level.
   b. All students enrolled in accelerated pathways are expected to demonstrate mastery in accelerated course content. LEAs and schools are responsible for providing timely and robust supports for students who struggle in accelerated courses.
   c. LEAs must implement mathematics course acceleration for all students who achieve and approach the highest proficiency level on state assessments in grades 3-6.
   d. Full expectations for acceleration practices can be found in MSDE's Mathematics Acceleration Guidance released by Summer 2025.
8. LEAs will be required to submit annual reports to MSDE detailing student outcomes, aligned to the strategies implemented to provide equitable access. MSDE will develop and communicate a template for reporting by Summer 2027.

B. COLLEGE AND CAREER READINESS MATH STANDARD PROGRESSION

1. LEAs shall prepare for full implementation of the revised mathematics standards and course progression for grades PreK-12 by SY 2028-2029.
   a. Beginning in SY 2026-2027, LEAs shall implement curriculum and instruction aligned to Prekindergarten through Grade 8 Maryland College and Career Readiness (MCCR) mathematics standards.
   b. All schools must shift from the current Algebra I – Geometry – Algebra II (AGA) secondary mathematics course progression to an Integrated Algebra course progression that launches students into their chosen mathematics pathway.
      i. Beginning in SY 2027-2028, LEAs shall implement curriculum and instruction aligned to PreK-Integrated Algebra 1 math standards for all students enrolled in Algebra for the first time.
      ii. Beginning in SY 2028-2029, LEAs shall implement curriculum and instruction aligned to PreK-Integrated Algebra 2 math standards for all students who completed Integrated Algebra 1 the prior school year.
   c. Beyond SY 2028-2029, all students should follow the PreK-12 course sequence culminating in secondary math pathways.

    d. Revised math standards will include an emphasis on the development of fluency with number operations and algebraic procedures, contextual application, and connections to financial literacy.

    e. MSDE shall develop repositories where the mathematics education community can access instructional resources to support implementing revised math standards, including the integrated course sequence, financial literacy applications, and differentiated resources to support students with disabilities.

2. Beginning in SY 2027-2028, all courses beyond Integrated Algebra 1 and 2 must be aligned to secondary math pathway standards. Schools and districts must provide access to a variety of secondary mathematics pathways that align with different career and academic interests.

    a. In alignment with the Launch Years Task Force recommendations, secondary math pathways include Quantitative Reasoning, Data and Data Analytics, Algebraic Foundations of Calculus, and Statistics and Probability as outlined in the math guidance documents. School leaders must ensure that these pathways are flexible and allow for movement between them based on student progress or evolving interests.

    b. District leaders are encouraged to develop innovative models for course offerings including but not limited to dual enrollment and centralized courses in cases where there are limited course offerings.

3. COMAR 13A.03.02.03- High school mathematics graduation requirements beginning with any student who enrolls in Algebra for the first time in school year 2027-2028 shall be updated to reflect:

    a. four credits and four years of mathematics,

    b. two of the four credits with instruction in Integrated Algebra 1 and Integrated Algebra 2 aligned with the statewide assessment for Algebra, and

    c. two credits aligned to courses in secondary mathematics pathways in which Integrated Algebra is a prerequisite.

4. LEAs are responsible for ongoing engagement with parents and students to communicate the expectations and content of revised math standards and course progression. MSDE will provide resources to support communication.

C. SYSTEM OF SUPPORT FOR EDUCATORS

1. Beginning in Spring 2025, LEA system and instructional leaders shall engage in professional learning and information sessions to understand the upcoming changes and start aligning their planning with the revised math standards and prioritized instructional strategies being developed by MSDE.

2. By Fall 2025, LEAs shall identify a team to participate in the initial professional learning and serve as LEA liaisons to support shifts in math standards, Integrated Algebra courses, and secondary math pathways.

    a. MSDE will lead initial professional learning, transitioning to a collaborative model with LEA liaisons to build LEA capacity for ongoing professional learning.

    b. LEA Liaison teams will be responsible for ongoing collaboration and feedback with MSDE.

3. By Spring 2027, MSDE will develop a Maryland Effective Mathematics Teaching course. This course will be available to all math educators, special educators, ML educators, coaches, interventionists, and administrators as a component of their Individualized Professional Development Plan (IPDP) towards licensure renewal. LEAs shall collaborate with MSDE to communicate the availability of this course to all educators and provide ongoing opportunities for educator course participation.

4. Beginning Spring 2025, MSDE shall initiate a statewide effort to engage families, community members, and local organizations in supporting mathematics education.

    a. Beginning in SY 2025-2026, LEAs shall implement their community engagement initiatives developed in collaboration with MSDE, focusing on sustaining long-term partnerships.

    b. LEAs should collaborate with MSDE to provide training and resources to support school - based educators to effectively engage with families and the community about best practices for supporting students in their mathematics learning experience.

D. ASSESSMENT AND ACCOUNTABILITY

1. By Summer 2025, MSDE will develop a Numeracy Development Framework. This will include a grade-by-grade description of the progression toward mathematical college and career readiness, aligned with the identified components of numeracy in Section III. This progression will outline the essential mathematical skills and understandings at each grade level to guide progress monitoring and inform the development of targeted support structures.

2. Beginning in SY 2026-2027, LEAs must identify and implement common unit or modular based assessments aligned to grade-level standards across all schools from grades K- 8.

    a. LEAs should also develop systems to monitor progress on these assessments across the district by student group and action plan to improve student outcomes for all students.

    b. LEA assessment systems should include support for teachers to interpret and respond to student performance.

3. Beginning in Fall 2027, MSDE will provide an annual statewide assessment data analysis report to LEAs. LEAs will be expected to review this data and their own collected course access data and develop an annual report that outlines strengths, areas of improvement, and planned actions to address any disparities. The first report will be submitted in January 2028.
   Key data points for analysis will include:

    a. Proficiency levels by cohort in grades 3-8

    b. Proficiency levels for accelerated students

    c. Progress for students performing at Level 1

    d. Integrated Algebra 1 participation and proficiency by grade level

4. Beginning in SY 2026-2027, LEAs are required to develop a systematic approach to family communication across the LEA to ensure the progression of student numeracy development is consistently communicated across schools and classrooms.

    a. Families of students in Kindergarten through Integrated Algebra must be notified at least twice a year (December and June) if their child is not progressing in alignment with grade-level standards based on their progress on CEAs.

      b.   LEAs must develop a clear communication plan that outlines how families are notified about their child's progress and interventions in place in alignment with the LEA's MTSS math structure.

5.   Beginning with the graduating class of 2030-2031 (students in grade 9 or below in school year 2027-2028), the Math Mastery option of the College and Career Readiness standard shall be updated to reflect the revised MCCR math standards and course progression.

6.   Beginning in SY 2027-2028, earning a final course grade of A, B, or C in a secondary mathematics pathways course in which Integrated Algebra is a prerequisite will be included in the Math Mastery option of the CCR standard.

7.   Beginning in SY 2028-2029, LEAs shall administer the Integrated Algebra statewide assessment to all students enrolled in Integrated Algebra 2 in the Winter testing window. In the final quarter and summer of each school year, LEAs shall provide responsive interventions and retesting opportunities to support students in reaching proficiency.

VI. Timeline Overview

Timeline	Policy Implementation
Spring 2025	• MSDE Mathematics Policy Adoption
Spring- Fall 2025	• Adoption of revised mathematics standards for PreK- Integrated Algebra 2 • Mathematics Policy Guidance Documents released (MTSS Math, Acceleration, Integrated Algebra course frameworks) • Initial Community & Educator Engagement Sessions • MSDE Numeracy Development Framework released • Joint collaborative/planning with LEA Math Supervisors & Advanced Academic Supervisors
Beginning in School Year 2025-2026	• Ongoing professional learning with LEA Liaisons • LEA led professional learning beginning by Spring 2026 • Scheduling and acceleration practices planning and piloted • Integrated Algebra 1 course resources released by Spring 2026 • Secondary math pathways standards developed
Beginning in School Year 2026- 2027	• Implementation of revised standards for PreK-8 • LEAs implement common standard aligned assessments across all schools • Scheduling and acceleration practices implemented in all schools • Ongoing professional learning • LEAs implement a Multi-Tiered System of Supports (MTSS) for mathematics instruction • MSDE Maryland Effective Mathematics Teaching course released • Required parent notification regarding student grade level standard proficiency progress • Secondary math pathways standards adopted • Integrated Algebra 2 course resources released by Spring 2027
Beginning in School Year 2027-2028	• Implementation of revised standards and course for Integrated Algebra 1 • LEA annual data reflection and action reports • Secondary math pathways standards implemented
Beginning in School Year 2028-2029	• Implementation of revised standards and course for Integrated Algebra 2 • Integrated Algebra State Assessment

VII. Responsibilities

Local Education Agencies (LEAs), The Maryland State Department of Education (MSDE), and the Maryland State Board of Education will collaboratively work to ensure that all students across Maryland have equitable access to high-quality mathematics instruction to prepare them for their college and career aspirations. This collaboration requires a shared system of responsibilities:

LOCAL EDUCATION AGENCY RESPONSIBILITIES

1. Collaborate with MSDE to implement policies that promote equitable access to high-quality mathematics instruction and MTSS math structures as outlined in MSDE guidance.
2. Adopt and implement instruction aligned to the revised MCCR math standards and course progression.
3. Develop and implement grade level aligned standard assessment systems to identify students for intervention and acceleration and ensure family communication.
4. Provide ongoing, job-embedded, professional learning for all educators to ensure consistency in implementation of equitable math instruction aligned to grade level standards and numeracy development progression.
5. Regularly monitor and report the effectiveness of implementation of courses aligned to MCCR mathematics standards, including the new integrated algebra courses, and secondary mathematics pathways.
6. Provide opportunities for continuous engagement with all stakeholders regarding the district's math programming and student progress.

MARYLAND STATE DEPARTMENT OF EDUCATION RESPONSIBILITIES:

1. Provide guidance and resources to support implementation of courses aligned to MCCR mathematics standards, including the new integrated algebra courses and secondary mathematics pathways.
2. Develop guidelines, protocols, and resources to support LEAs in implementing inclusive practices including Numeracy Development Framework, MTSS guidelines, templates for monitoring and reporting, and annual LEA data reports.
3. Provide ongoing professional learning opportunities and resources to educators, system and instructional leaders, counselors, and support staff to support equitable access and opportunities in mathematics education statewide.
4. Monitor the implementation of math policy initiatives and adjust as needed.

5. Provide opportunities for continuous engagement with all stakeholders regarding statewide math programming and student progress.

MARYLAND STATE BOARD OF EDUCATION RESPONSIBILITIES

1. Review and approve the Mathematics Policy developed by MSDE.

2. Review the implementation of this policy in alignment with improving student achievement in mathematics for all Maryland students by analyzing LEA and MSDE annual reports.

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Appendix A – Two-Year Integrated Algebra Pathway

The Integrated Algebra Pathway leverages a strategic integration of algebra, geometry, and statistics to highlight their interconnected nature, which fosters a more coherent and deeper understanding of mathematics. **This approach does not compress multiple years of coursework into a shorter timeframe; rather, it thoughtfully weaves together essential mathematical ideas while refining the content scope to focus on the most relevant and widely applicable content.** By prioritizing key core concepts and reducing redundancy, this approach ensures that all students build a strong mathematical foundation while shifting more specialized topics to secondary math pathway courses where they can be explored in greater depth. Additionally, it streamlines the content by removing topics that do not meaningfully contribute to students' mathematical reasoning and problem-solving abilities, making space for deeper engagement with essential mathematics.

COURSE CONTENT OVERVIEW

Integrated Algebra 1

Integrated Algebra 1 introduces students to mathematical structures through patterns of change, data analysis, and geometric reasoning. The course focuses on comparing linear and exponential patterns, formalizing them into functions, and using data and statistics as a context for exploration. Geometry concepts are interwoven, particularly in the study of lines, angles, transformations, and spatial relationships among congruent figures and special shapes.

Core Topics (Not exhaustive)

- Recognizing and Modeling Patterns of Change
    - Identify and model linear and exponential trends in bivariate data.
    - Explore and analyze linear and exponential functions.
    - Model real-world scenarios and translate between function representations.
- Quantitative Reasoning and Data Analysis
    - Analyze one-variable data using technology.
    - Interpret and compare data distributions.
- Developing Proficiency in Equations and Inequalities
    - Solve and interpret linear equations, inequalities, and systems.
    - Graph and analyze solution sets.
    - Solve systems using multiple methods.
- Exploring Geometric Structures and Transformations
    - Explore rigid motions and their role in congruence.
    - Verify triangle congruence and figure properties.
    - Use coordinate geometry to analyze geometric relationships.
- Exploring Structure and Transformations of Functions
    - Investigate absolute value and piecewise functions using technology.
    - Analyze graph transformations of key functions.

Integrated Algebra 2

Building on Integrated Algebra 1, this course delves into quadratic functions as a new pattern of change, providing a foundation for further algebraic growth and deeper connections to data and statistics. Students also engage in an in-depth exploration of similarity and right triangle trigonometry.

Core Topics (Not exhaustive)

- Extending Patterns of Change
    - Compare patterns of change in linear, exponential, and quadratic relationships.
    - Recognize and interpret quadratic functions across tables, graphs, and equations.
- Transforming and Solving Quadratic Equations
    - Describe transformations of quadratic functions.
    - Convert quadratic functions between standard, vertex, and factored forms to reveal key properties.
    - Solve quadratic equations using graphing, factoring, completing the square, and the quadratic formula.
- Modeling with Data and Polynomial Expressions
    - Use regression and digital tools to model data with quadratic functions.
    - Perform polynomial operations and analyze their effects on graphs and equations.
- Exploring Geometric Relationships
    - Explore dilations, similarity, and proportionality.
    - Apply the Pythagorean Theorem and trigonometry to right triangles.
    - Model real-world objects using geometric relationships and equations.
    - Investigate circles.

RATIONALE FOR SHIFT

Addressing Misalignment with Post-CCR Opportunities

- The *Blueprint for Maryland's Future* initiates post-CCR opportunities at the end of 10th grade (MSDE, 2020). However, the mathematical foundations within the traditional three-year AGA sequence are not fully developed for most students until after 11th grade.
- The two-year integrated approach identifies essential content from Algebra 1, Algebra 2, Geometry, and Statistics and restructures it across two years to better align with the AIR study findings (AIR, 2023) and the CCR opportunities defined by the Blueprint for Maryland's Future.

Ensuring All Students Access Essential Content for Post-Secondary Success by the End of 10th Grade

- The Maryland CCR Empirical Study (AIR, 2023) highlights the importance of algebraic content for post-secondary success.
- Analysis of current content standards reveals that many of these algebraic skills are not fully covered until the completion of Algebra 2.
- The AIR study finds that:
    - Many geometry standards are not highly aligned with the prerequisite competencies for post-secondary mathematics success
    - Statistics content and standards are relevant for college and career success (Maryland CCR Empirical Study: Final Report – Exhibit 19, p. 56).

- Research from the National Center on Education and the Economy (NCEE, 2013) concludes that the most demanding mathematics in required college courses primarily derives from Algebra 1, selected Algebra 2 content, and limited Geometry topics.
- High school statistics education is increasingly essential for career readiness and provides critical data analysis skills applicable across various fields (Brookings, 2020; Gould, 2016; NCTM, 2018).
- The U.S. Department of Education (2021) emphasizes that integrating statistics enhances workforce readiness through:
  - Data visualization, hypothesis testing, and performance trend analysis.

Additional Support for the Shift

- Research supports the benefits of an integrated approach to mathematics instruction (Grouws et al., 2013; Schoen & Hirsch, 2020; Tarr et al., 2013; Tauer, 2002).
- NCTM's *Principles and Standards for School Mathematics* states:
  - "When students see the connections across different mathematical content areas, they develop a view of mathematics as an integrated whole... As students' knowledge of mathematics, their ability to use a wide range of mathematical representations, and their access to sophisticated technology and software increase, the connections they make with other academic disciplines, especially the sciences and social sciences, give them greater mathematical power" (NCTM, 2000, p. 354).
- The development of the two-year integrated sequence has been informed by:
  - K-12 mathematics experts, higher education faculty, and College Board prerequisites (see Appendix B).

Appendix B. Prerequisite Mathematics Concepts for Advanced Mathematics

AP Precalculus Prerequisite ([College Board, 2024](#))

- Proficiency with:
    - Linear functions (Integrated Algebra 1)
    - Polynomial addition and multiplication (Integrated Algebra 2)
    - Factoring quadratic trinomials (Integrated Algebra 2)
    - Using quadratic formula (Integrated Algebra 2)
    - Solving right triangle problems involving trigonometry (Integrated Algebra 2)
    - Solving linear and quadratic equations and inequalities (Integrated Algebra 1 & Integrated Algebra 2)
    - Algebraic manipulation of linear equations and expressions (Integrated Algebra 1 & Integrated Algebra 2)
    - Solving systems of equations in two and three variables (Integrated Algebra 1)
- Familiarity with:
    - Piecewise-defined functions (Integrated Algebra 1)
    - Exponential functions and rules for exponents (Integrated Algebra 1 & Integrated Algebra 2)
    - Radicals (Integrated Algebra 2)
    - Complex numbers (Integrated Algebra 2)

AP Statistics Prerequisite ([College Board, 2024](#))

- A second-year course in algebra (Integrated Algebra 2)

IB Mathematics: Diploma Programme (DP) Math Courses

- No specific pre-requisites required.

Presentation Outline

1. Stakeholder Engagement Overview

2. Revisions by Topic

3. Summary & Next Steps

Stakeholder Engagement

January 2025

February 2025

JANUARY 28 - ON

Feedback shared via email and phone

FEBRUARY 4 - 24

Public feedback through online Form

FEBRUARY 13 - 14

LEA Leadership Math Policy Feedback sessions

FEBRUARY 25

State Board of Education hosted Public Hearing
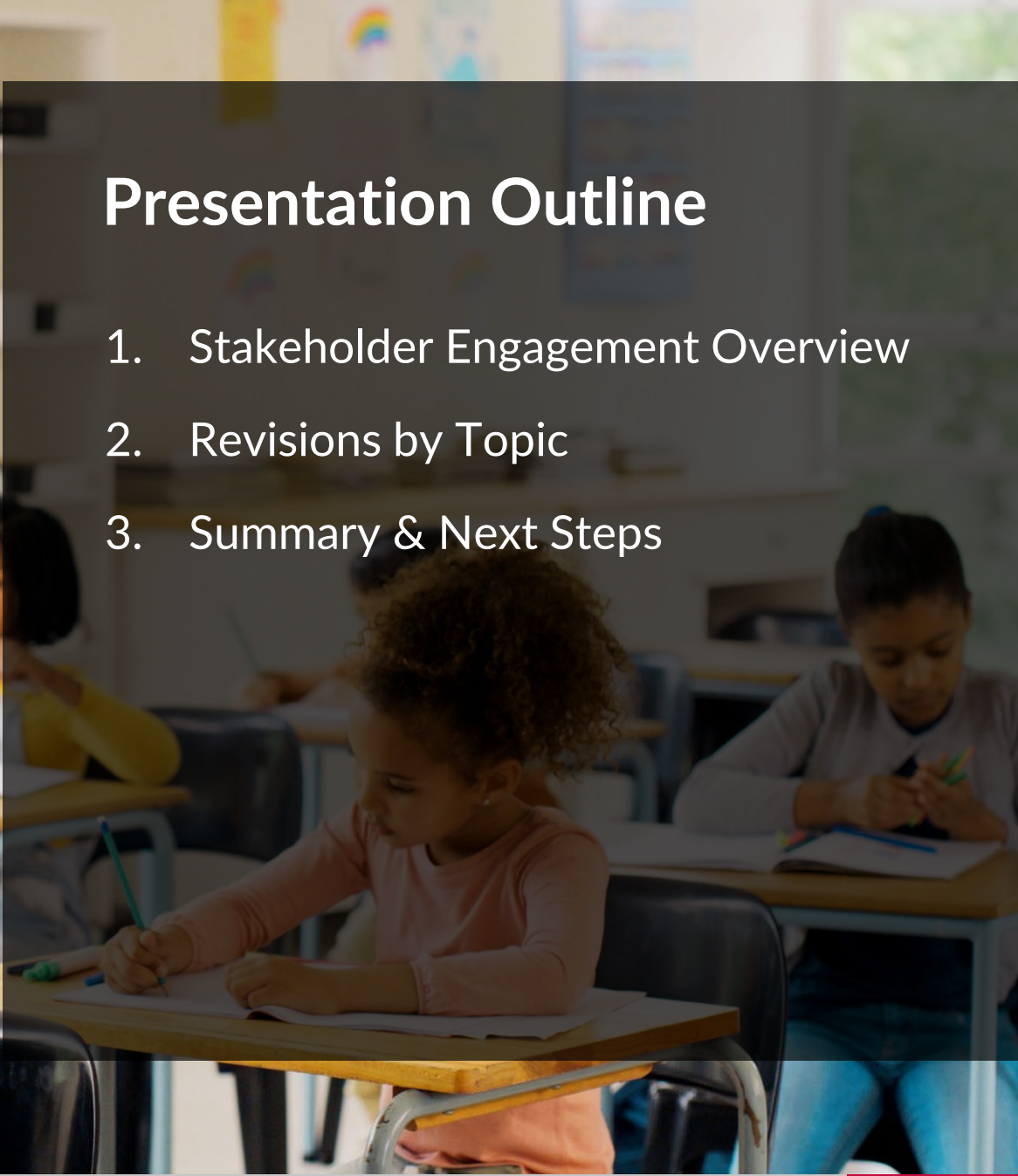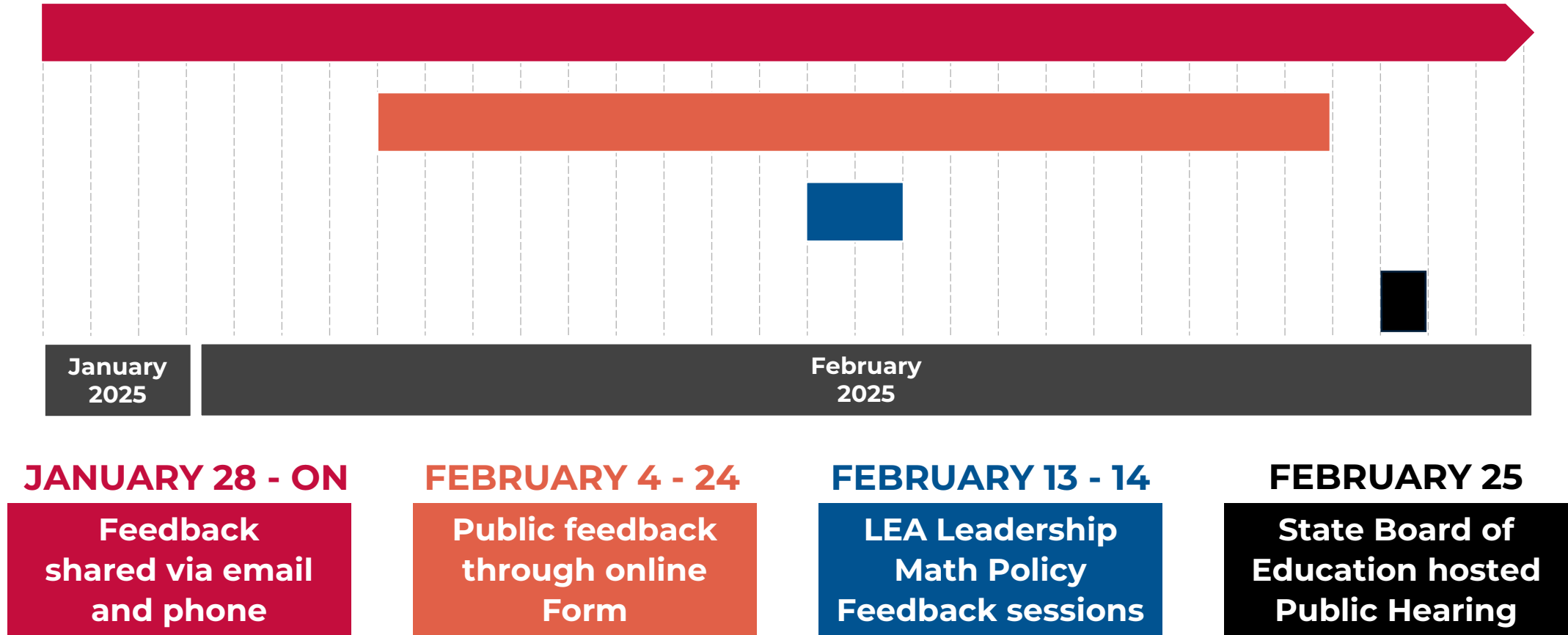
High-level Trends

Feedback received from over 100 stakeholders and stakeholder groups, representing over 20 LEAs

1

Equity, Access, and Student Learning

2

Learning Structures and Feasibility

3

Timeline and Implementation

Summary of Equity, Access, and Learning Experience Feedback

1

Equity, Access, and Student Learning

Student Groups

Terminology

Acceleration and Gifted & Talented Programs

Summary of Learning Structures and Feasibility Feedback

2

Learning Structures and Feasibility

Multi-tiered System of Supports (MTSS)

Scheduling and Grouping

Instructional Materials for Integrated Algebra Courses

Summary of Timeline and Implementation Feedback

3

Timeline and Implementation

Literacy and Math Policy Timeline Overlap

Educator Professional Learning

Standards Revision and Assessment Alignment

Ongoing Implementation Support

MSDE & LEA Partnership

Clear, Consistent Communication

Family and Community Engagement

Guidance and Resources

Monitoring and Reporting Progress

Future Stakeholder Engagement

March 2025

ONGOING	MARCH 14	MARCH 20	MARCH 25
Feedback shared via email and phone	**Pi Day film screening and policy discussion**	**LEA Math Supervisor Collaborative**	**State Board of Education request for adoption**