Maryland
STATE DEPARTMENT OF EDUCATION

Carey M. Wright, Ed.D.
State Superintendent of Schools

**TO:** Members of the Education Policy Committee

**FROM:** Carey M. Wright, Ed.D., State Superintendent of Schools

**DATE:** June 12, 2025

**SUBJECT:** Revisions to Maryland College and Career Ready Standards in Mathematics

**Executive Summary**
The purpose of this item is to provide an update on the revised Maryland College and Career Standards for PreK- Integrated Algebra 2 Mathematics courses.

**Background and Process**
In the summer of 2024, the Maryland State Department of Education (MSDE) established statewide Standards and Frameworks Validation Committees (SFVCs), comprised of parents, educators, school system leaders, and subject matter experts. Through several in-person and virtual meetings, the committees studied emerging state and national instructional programs to ensure alignment between revisions and policies. Based on the SFVCs' recommendations, as well as public feedback, the MSDE has revised the Maryland College and Career Ready Standards in Literacy/English Language Arts and Mathematics.

**Action Required**
No action required.

**Attachments**
- Revisions to Maryland College and Career Ready Standards PowerPoint Presentation
- Revised Math Standards Crosswalks
- Response to Public Feedback

**Mathematics Standards Committee Members**
Lyndsey Brightful, MSDE (Co-Chair)

Danielle Glenn, Wicomico County (High School Teacher)

Erin Godwin, Cecil County (School Administrator)

Dr. Karen Karp, National (Assoc. Content Expert)

Lisa McKinnon, Wicomico County (Secondary Math Supervisor)

Karen Riley-Jeffers, Anne Arundel County (Parent - High School; also a Math Supervisor) - joined as full member in Nov 2024

John SanGiovanni, Howard County (Elementary Math Supervisor)

Dr. Beyunka Scates, Prince George's County (Middle School Math Instructional Specialist)

Dr. John William Staley, Baltimore County (Co-Chair; LEA Special Projects Coordinator)

Amy Stoops, Dorchester County (Early Elementary Teacher)

Therman Trotman, Harford County (Parent - Middle & High School)

Hattie Webb, St. Mary's County (Secondary Math Instructional Resource Coach)

MSDE Mathematics Team: Stacie Marvin, Jen Meehan, Robert Richardson (Coordinators of Mathematics); Lynda Brooks (Notetaker)

DIVISION OF INSTRUCTIONAL PROGRAMS

# Revisions to Maryland College and Career Ready Standards

June 12, 2025

Presented By |
Dr. Elise Brown, Assistant State Superintendent
Lyndsey Brightful, Mathematics Director

Maryland
STATE DEPARTMENT OF EDUCATION

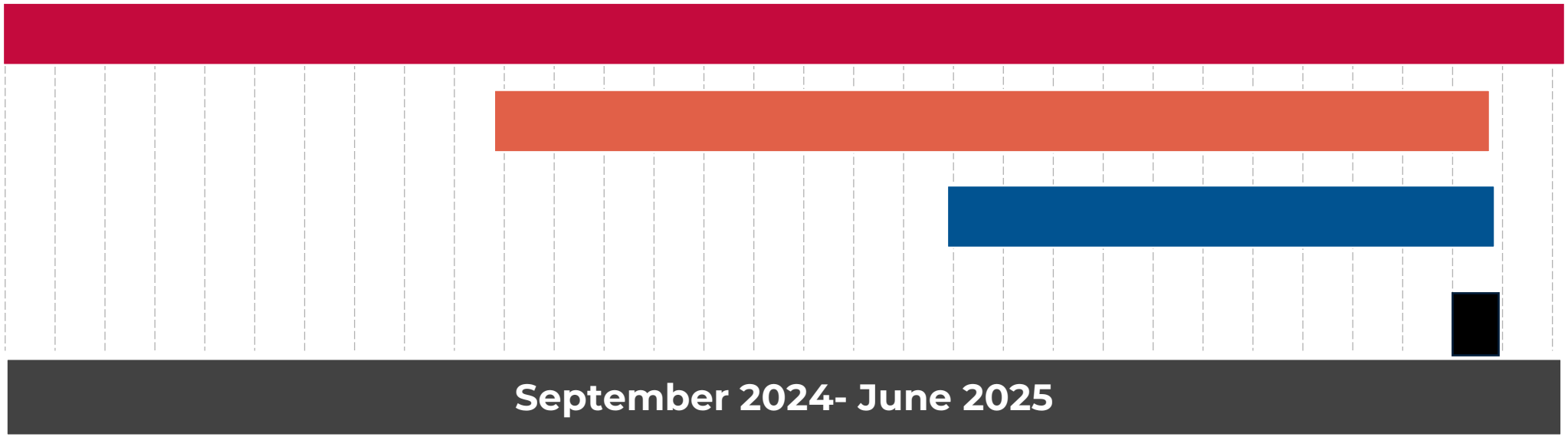
# Presentation Outline

1. Revision Process
2. High-level Shifts
3. Feedback Summary
4. Implementation Support

Information Only

# Maryland College and Career Ready Standards for Mathematics

# Mathematics Standards Revision Process




**SEPTEMBER - ON**

**Mathematics Standards Framework and Validation Committee**

**DECEMBER-MAY**

**LEA Math Leadership Engagement**

**MARCH- MAY**

**Collaboration with National Experts and Lauch Years Task Force**

**MAY**

**Public Comment Period Available**

# High-level Shifts

**Engagement with over 50 stakeholders and stakeholder groups, representing 20 LEAs.**

1. **Emphasis on fluency, estimation, benchmark numbers, and reasoning**
2. **Reasoning with Data and Statistics Progression**
3. **Integrated Algebra 1 and 2**

# Support Feedback Summary

**During the public feedback period, 242 respondents shared an explicit reaction to the standards, including 40% (96 respondents) indicated support for the revised standards as written.**

1. **Clarity and coherence**
2. **Integration of algebra, geometry, and progression of data and statistics**
3. **Appropriate balanced emphasis of procedural fluency and conceptual understanding**

# Support with Changes Feedback Summary

**During the public feedback period, 242 respondents shared an explicit reaction to the standards, including 43% (105 respondents) indicated support for the revised standards with some changes.**

1. **Change to standard coding**
2. **Examples and number limits**
3. **Specific standard feedback on content specific vocabulary and formatting**

# Oppose Feedback Summary

**During the public feedback period, 242 respondents shared an explicit reaction to the standards, including 17% (41 respondents) indicated opposition to the revised standards.**

1

**Do not want revised standards**
***41% (17 of 41)***

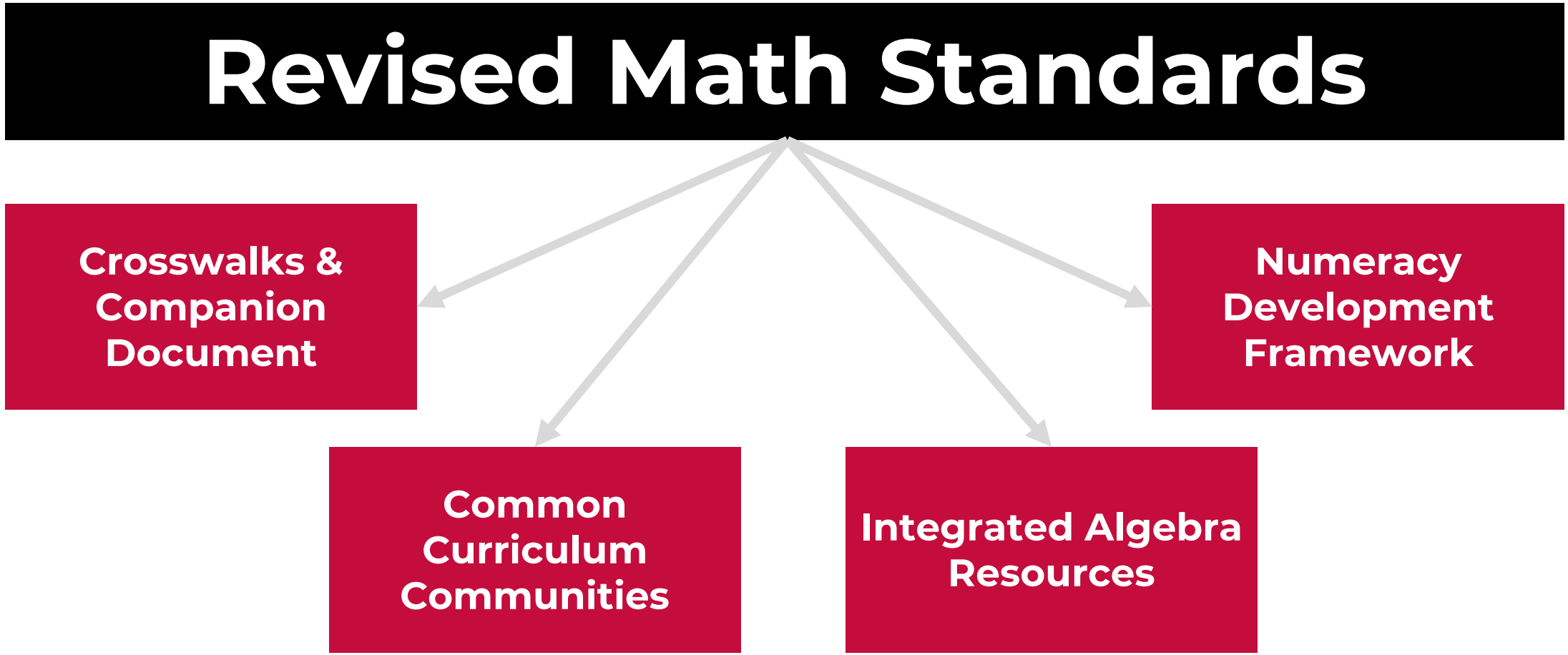
2

**Curricular alignment**

3

**Algebra 2 and/or Geometry content removal**

# Revised Standards Implementation Support



# Final Requested Edits

# Revised PreK-12 Mathematics Standards

## PUBLIC COMMENT OVERVIEW

The Maryland State Department of Education (MSDE) invited public comments on the revised Maryland PreK-12 Mathematics Standards from May 19-June 3, 2025. Overall, 368 respondents across 23 Local Education Agencies completed some portion of the feedback form. Some respondents indicated that their response represented a group of educators.

Of the responses, 242 respondents shared an explicit reaction to the standards, including:

- 40% (96 respondents) indicated support for the revised standards as written;
- 43% (105 respondents) indicated support for the revised standards with some changes; and
- 17% (41 respondents) indicated opposition to the revised standards. Note: 41% (17 of 41) disagree with revising the standards at all.

Of the 368 respondents, 176 provided written comments. MSDE's Mathematics Branch also held a virtual Math Standard Revision Engagement Session to allow the opportunity for LEA leaders to provide verbal comments. Comment summaries are included below, along with MSDE's response, and an indication of whether the comments led to a change in the standards.

## COMMENTS FROM RESPONDERS WHO SUPPORT THE REVISED STANDARDS AS CURRENTLY WRITTEN OR SUPPORT THE REVISED STANDARDS WITH SOME CHANGES.

| Public Comment | MSDE Mathematics Branch Response | Incorporated into Final Version |
|---|---|---|
| 1. Appreciate the standard language clarity, coherence, and grade to grade connections | Clarity, coherence, and visible progression were foundational to the standards revision process. One primary goal is to ensure the standards are more accessible and engaging for the entire mathematics education community. | N/A |
| 2. Appreciate the inclusion of counting backward, subitizing, and patterns in PreK and K | The inclusion of this content is necessary to the foundation of numeracy development. This content builds number sense, strengthens sequencing, supports early strategies for addition and subtraction and lays foundation for algebraic thinking. | N/A |

| Public Comment | MSDE Mathematics Branch Response | Incorporated into Final Version |
|---|---|---|
| 3. Appreciate the explicit emphasis on fluency, estimation, benchmark numbers, and reasoning | Fluency, estimation, using benchmark numbers, and reasoning play an essential role in numeracy development. Emphasis in these areas support students in making sense of numbers, choosing appropriate strategies, and solving problems efficiently building a strong foundation for flexible thinking. | N/A |
| 4. Appreciate the algebraic focus in Integrated Algebra 1 being linear and exponential and that quadratics are the primary focus of Integrated Algebra 2 | Focusing Integrated Algebra 1 on linear and exponential functions allows students to explore these two distinct but related patterns of change side by side, while centering quadratics in Integrated Algebra 2 builds on that foundation and supports deeper comparisons across function types. | N/A |
| 5. Appreciate the integration of algebra, geometry, and enhanced focus on the progression of data and statistics content | The integration of algebra, geometry, and statistics in high school continues the coherent approach established in PreK–8 and reflects how mathematics is meaningfully interlaced through lived experiences or mathematical situations., interconnected rather than siloed. | N/A |
| 6. Apprehension about changes to coding of standards | MSDE's Mathematics Branch acknowledges the apprehension about changes to the standard coding system, especially given the widespread familiarity with CCSS codes and existing curriculum alignment. The updated coding structure is designed to better reflect the components of the numeracy progression, enhance clarity, and support coherence across PreK–12, including alignment with the secondary mathematics pathways. To support implementation, all communications and resources associated with the new standards will include clear crosswalks to existing CCSS codes so that educators, leaders, and curriculum developers can easily connect the new standards to familiar ones. Additionally, The Mathematics Standards and Framework Validation Committee unanimously voted to shift the standard coding with the revisions to clearly communicate a change in expectations and this included domain shifts to clearly differentiate old and new standards. | No |

| Public Comment | MSDE Mathematics Branch Response | Incorporated into Final Version |
|---|---|---|
| 7. Concern about the removal of examples from standard language | MSDE Mathematics Branch will develop Companion Guides for each grade level that will provide more detailed information about each standard, including connections to prior and subsequent learning. The Companion Guides will also provide more extensive examples, learning opportunities that students should engage in, and connections to modeling, reasoning, and financial literacy. Specific examples were removed from standard language to avoid over emphasis on specific models or problem types. | No |
| 8. Clarification needed around number limits | The Companion Guides for each grade level will provide more detailed information about individual standards, including number limits. | No |
| 9. Concern about the inclusion of subjective adverbs (i.e., flexibly, efficiently) in relation to fluency | These terms were included to emphasize the importance of fluency across the content and to address common misunderstandings of the term. “Flexibly and efficiently” aligns to the National Council of Teachers of Mathematics definition of fluency and highlights that fluency extends beyond speed and accuracy. | No |
| 10. Concern about decomposing numbers into three addends in Kindergarten | It is important for kindergarten students to recognize that numbers can be decomposed in multiple ways, including 3 addends. This builds a strong foundation for number sense and flexibility with early addition strategies. | No |
| 11. Concern about real-world application of time and money in Grades 1 and 2. | Revisions will be made to 1.GR.C.5 and 2.GR.C.7 to include the use of analog clocks. Additional guidance around how analog clocks should be utilized in instruction will be included within Companion Guides. | Yes |

| Public Comment | MSDE Mathematics Branch Response | Incorporated into Final Version |
|---|---|---|
| 12. Clarity needed around the fluency standards in elementary grades | Fluency is developed in phases and begins with counting, where students rely on physical or mental counting. Then students transition to deriving, where they use reasoning strategies based on known facts. The final stage is mastery, where they recall or quickly apply strategies with automaticity. Research emphasizes that students must spend sufficient time in the deriving phase to build flexible, lasting fluency, and that instruction should begin with foundational facts before progressing to derived fact strategies to ensure conceptual understanding and long-term retention. | No |
| 13. Clarity needed around “in context” instead of “real-world problems” | The phrase "in context" is intentional to emphasize that students should apply mathematical concepts in authentic, meaningful situations that are relevant to their learning—not just in contrived or overly simplified “real-world” scenarios. This approach supports deeper understanding by connecting math to students’ experiences, and problem-solving processes. “In context” closely aligns to the goal of engaging students in authentic, meaningful situations, which could be rooted in lived experiences and/or mathematical situations. | No |
| 14. Mixed feedback on content specific vocabulary and formatting in relation to specific standards (appreciation and suggested shifts) | MSDE’s Mathematics Branch reviewed all standard specific feedback and consulted with the mathematics Standards Framework and Revision Committee and in some cases national mathematics experts to address all concerns and suggestions and made some updates to vocabulary and formatting. There are also some spelling and grammar errors that will be corrected. | Yes |

## COMMENTS FROM RESPONDERS WHO OPPOSE THE REVISED STANDARDS

| Public Comment | Response | Incorporated into Final Version |
|---|---|---|
| 1. Changing the standards will not improve student outcomes in mathematics across Maryland. | Maryland College and Career Readiness standards for mathematics have not been revised since 2010. It is important to ensure that statewide math standards are regularly reviewed for relevance and coherence. The specific intention of this revision was to ensure statewide mathematics standards that promote a clear and consistent progression from PreK through high school that will improve student outcomes by providing a more cohesive and meaningful mathematical learning experience for all students.<br><br>At the elementary level, this includes clarifying number sense expectations, emphasizing specific strategies and representations, and strengthening foundational numeracy skills.<br><br>There was an intention to elevate fluency goals with a focus on algebraic thinking and create a more cohesive geometry experience across the middle grades.<br><br>The revised high school mathematics standards reflect a shift to support deeper conceptual understanding by identifying essential, widely applicable mathematical concepts, reducing redundancy, and refining the scope of the content to emphasize reasoning and problem solving. | N/A |
| 2. LEAs do not have curricular resources to support math educators with implementation of revised standards. | To support PreK–8 implementation in School Year 2025-2026, MSDE will facilitate collaboration among LEA leaders who use the same or similar instructional materials so LEA can co-develop resources and make the necessary adjustments aligned to support educators with implementing the updated standards. To support Integrated Algebra 1 implementation in School Year 2027-2028 and Integrated Algebra 2 implementation in School Year 2028-2029, MSDE will provide instructional resources. LEAs will have time to decide whether to adjust their existing materials or transition to state-provided resources. | N/A |

| Public Comment | Response | Incorporated into Final Version |
|---|---|---|
| 3. Concern about squeezing 3 courses (Algebra 1 & 2, Geometry) in 2 (Integrated Algebra 1 & Integrated Algebra 2) | The revised standards do not condense three years of content into two. They thoughtfully integrate key mathematical ideas while narrowing the focus to the most relevant and widely applicable content. For context: Algebra 1 previously had 40 standards; Algebra 2 had 38, and Geometry had 36. In contrast, Integrated Algebra 1 and 2 each have 30 standards. While standard count doesn't fully define course scope, it clearly shows this is not simply a matter of squeezing more content into fewer courses. | No |
| 4. Concern about removing trigonometric functions from Algebra 2 | Trigonometric *ratios* are introduced in Algebra 2, but full study of trigonometric functions is reserved for Precalculus, where they are taught in depth. Since Precalculus does not assume prior knowledge of these functions, early "surface" exposure in Algebra 2 offers limited value. Students benefit more from engaging with trigonometric functions meaningfully in Precalculus or in applied, career-specific contexts. | No |
| 5. Logarithms should be introduced in the Integrated Algebra 1 & Integrated Algebra 2 progression | Logarithms will be included in the context of inverse functions.<br><br>IA2.AT.D.12 Find and interpret the inverse of quadratic and exponential functions using algebraic and graphical representations.<br><br>a. Restrict the domain of a quadratic to make it one-to-one and express its inverse as a square root function.<br>b. Express the inverse of an exponential function as a logarithmic function and evaluate expressions involving logarithms.<br>c. Graph a function and its inverse and analyze features (e.g., domain and range, intercepts, points of intersection) and symmetry across the line y = x.<br><br>Interpret the meaning of inverse functions in context. | Yes |

| Public Comment | Response | Incorporated into Final Version |
|---|---|---|
| 6. Students should know about asymptotes before they finish the Integrated Algebra sequence | Asymptotes will be identified as a key feature for investigation. This would be done in the context of horizontal asymptotes of exponential functions.<br><br>IA1.AT.D.14 Represent functions using tables and graphs and interpret key features in context. Key features include domain, intercepts, intervals of increase and decrease, positive and negative values, end behavior, asymptote, and points of transition between pieces.<br><br>a. Analyze linear and exponential functions by identifying patterns in tables and graphs. Distinguish between constant and proportional growth and interpret functions' key features in context.<br>b. Extend the understanding of functions to include piecewise-defined and absolute value functions. Represent them in tables and graphs, interpret key features in context, and explain how absolute value functions can be represented as a specific case of piecewise functions.<br>c. Relate key features of a function's graph and table to the characteristics of a context, and justify the appropriateness of a function model based on the situation | Yes |
| 7. Students should have the opportunity to work with literal equations | Work with literal equations will be included in the context of applying geometric formulas in modeling situations.<br><br>IA2.GR.D.10 Rearrange geometric formulas to isolate and interpret a quantity of interest in context (e.g., solving for height in a volume formula), using reasoning aligned with solving equations and modeling with mathematics | Yes |

| Public Comment | Response | Incorporated into Final Version |
|---|---|---|
| 8. Concern about removing rational functions from Integrated Algebra 2 | Rational functions are not included in Algebra 2 because they are not a prerequisite for Precalculus. In fact, AP Precalculus begins with a deep exploration of rational functions in Unit 1. Introducing them in Algebra 2 would offer only surface-level exposure. Students will benefit more from engaging with this function family meaningfully and in depth in Precalculus where students will have the opportunity to make mathematical connections. | No |
| 9. In Integrated Algebra 1, it was suggested that using "reversing" language for inverses should be avoided | IA.AT.D.17c will be updated:<br><br>Find and interpret the inverse of a linear function in context.<br><br>a. Show that a linear function is one-to-one and therefore has an inverse that is also a function.<br>b. Find the inverse of a linear function represented with an equation or a table.<br>c. Interpret the meaning of the inverse in context as a relationship that maps outputs of the original function back to their corresponding inputs. | Yes |
| 10. The content in Integrated Algebra 1 and 2 do not prepare students for Precalculus. | Integrated Algebra 1 and 2 content standards were revised in alignment to AP Precalculus prerequisites. Integrated Algebra 1 and 2 are designed to prepare all students for the Secondary Math Pathway of their choice. For some students, this will be Precalculus, but for others it may be Quantitative Reasoning, Data Science, or Statistics. Some concepts are introduced in Integrated Algebra 2 with the understanding that they will be reinforced and mastered in subsequent courses. Standard revisions for secondary math pathway courses will be completed in upcoming years. | No |