

Overview

This mathematics instructional scope was created by a cohort of New Mexico educators and the New Mexico Public Education Department. This document is organized into three sections. [Section 1](#) describes how to use this document to support equitable and excellent mathematics instruction. [Section 2](#) provides additional resources, references, and glossary.

The intention of this document is to act as a companion during the planning process alongside [High Quality Instructional Materials \(HQIM\)](#). A [sample template](#) is presented to show a quick snapshot of planning supports provided within each cluster of standards in section 2.

During the creation of this document, we leveraged the work of other states, organizations, and educators from across the country and the world. This work would not have been possible without all that came before it and we wish to express our sincerest gratitude for everyone that contributed to the resources listed within our [references](#).

Section 1: New Mexico Instructional Scope for Supporting Equitable and Excellent Mathematics Instruction

To better understand the planning support provided in section 2, for each cluster of standards, this section provides a brief description of each planning support including: *what* support is provided; *why* the planning support is critical for equitable and excellent mathematics instruction; and, *how* to use the planning support with HQIM.

Cluster Statement

What: The New Mexico Mathematics Standards are grouped by Domains with somewhere between 4 to 10 domains per grade level. Within each domain the standards are arranged around clusters. Cluster statements summarize groups of related standards.

Why: The New Mexico Mathematics Standards require a stronger *focus*¹ on the way time and energy are spent in the mathematics classroom. Students should spend the large majority of their time (65-85%) on the major clusters of the grade/course. Supporting clusters and, where appropriate, additional clusters should be connected to and engage students in the major work of the grade.

How: When planning with your HQIM consider the time being devoted to major versus additional or supporting clusters. Major Work of each grade should be designed to provide students with strong foundations for future mathematical work which will require more time than additional or supporting clusters. Consider also the ways the HQIM makes explicit for students the connections between additional and supporting clusters and the major work of the grade.

¹ Student Achievement Partners. (n.d.). College- and Career-Ready Shifts in Mathematics. Retrieved from <https://achievethecore.org/page/900/college-and-career-ready-shifts-in-mathematics>

Standard Text

What: Each cluster level support document contains the text of each standard within the cluster.

Why: The cluster statement and standards are meant to be read together to understand the structure of the standards. By grouping the standards within the cluster the connectedness of the standards is reinforced.

How: The text of the standards should always ground all planning with HQIM. Reading the standards within a cluster intentionally focuses on the connections within and among the standards.

Standards for Mathematical Practice

What: The Standards for Mathematical Practice describe the varieties of expertise and habits of mind that mathematics educators at all levels should seek to develop in their students.

Why: Equitable and excellent mathematics instruction supports students in becoming confident and competent mathematicians. By engaging with the standards for mathematical practice students are engaging in the practice of doing mathematics and development of mathematical habits of mind—the ability to think mathematically, analyze situations, understand relationships, and adapt what they know to solve a wide range of problems, including problems they may not look like any they have encountered before.²

How: When planning with HQIM it is critical to consider the connections between the content standards and the standards for mathematical practice. The planning supports highlight a few practices in which students could engage when learning the content of the standard. Note it is not necessary or even appropriate to engage in all of the practices every day, rather choosing a few and spending time intentionally supporting students in learning both the what (content standards) and the how (standards for mathematical practice) will create a stronger foundation for ongoing learning.

Students Who Demonstrate Understanding Can (Webb's Depth of Knowledge and Bloom's Taxonomy)

What: The New Mexico Mathematics Standards include each aspect of mathematical rigor: conceptual understanding, procedural skill and fluency, and application to the real world.³ This planning support considers which aspect(s) of rigor are within each standard and then identifies academics skills students need to demonstrate comprehension of the standard and associated mathematical practices. The planning supports also provide information about two common classifications on cognitive complexity, Webb's Depth of Knowledge and Bloom's Taxonomy.

Why: Analyzing standards alongside the standards for mathematical practice provide a fuller picture of the mathematical competencies demanded in the standard.

How: When planning for a cluster of standards with your HQIM a critical first step is to analyze the content and language demands of the standards and standards for mathematical practice. The analysis can be used to inform formative assessment, or it can be used to plan/design appropriate formative assessment.⁴ The planning supports provide a possible break-down of the standard that can serve as the basis for this sort of analysis.

² Seeley, C. L. (2016). Math is Supposed to Make Sense. In *Making sense of math: How to help every student become a mathematical thinker and problem solver*. Alexandria, VA, USA: ASCD. (P. 13)

³ Student Achievement Partners. (n.d.). College- and Career-Ready Shifts in Mathematics. Retrieved from <https://achievethecore.org/page/900/college-and-career-ready-shifts-in-mathematics>

Clarification Statement

What: The clarification statement provides greater clarity for teachers in understanding the purpose of the standards within a cluster.

Why: The New Mexico Mathematics Standards illustrate how progressions support student learning within each major domain of mathematics. The clarification statement provides additional context about the ways each cluster of standards supports student learning of the larger learning progression.

How: When planning with HQIM use the clarification statement to support an understanding of how the materials use specific types of representations or change the learning sequence from instructional approaches not grounded in progressions of learning.

Common Misconceptions

What: This planning support identifies some of the common misconceptions students develop about a mathematical topic.

Why: Students create misconceptions based on an over generalization of patterns they notice or an over reliance on rules rather than underlying mathematics. Rules in mathematics expire⁶ over time (e.g., you can't subtract 1-3) as students expand their knowledge of mathematics (e.g., from whole numbers to rational numbers). It is critical to understand some of the common misconceptions students can develop so we can address them directly with students and continue to build a strong foundation for their mathematical learning.

How: When planning with your HQIM look for ways to directly address with students some common misconceptions. The planning supports in this document provide some possible misconceptions and your HQIM might include additional ones. The goal is not to avoid misconceptions, they are a natural part of the learning process, but we want to support students in exploring the misconception and modifying incorrect or partial understandings.

Student Discourse Guide

What: This guide provides educators with suggested student discourse questions to encourage student conversation about mathematical concepts. Purposeful, rich classroom discourse offers students the opportunity to express their ideas, thinking, and to critique the reasoning of others in a variety of ways (writing, drawing, verbal).

Why: Purposeful implementation of classroom discourse allows students to activate funds of knowledge and to refine their mathematical understanding.

How: When students have frequent opportunities for discourse they find various paths to solutions and reveal knowledge or misunderstandings to educators. The process also allows educators to honor students' culture, lived experiences and evolving math identities.

Vertical Alignment

What: The New Mexico Mathematics Standards are designed around coherent progressions of learning. Learning is carefully connected across grades so that students can build new understanding onto foundations built in previous years. Each standard is not a new event, but an extension of previous learning.⁵ The connections to previous, current and future learning make this coherence visible.

Why: Students build stronger foundations for learning when they see mathematics as an inter-connected discipline of relationships rather than discrete skills and knowledge. The intentional inclusion of connections to previous, current, and future learning can support a more interconnected understanding of mathematics.

How: When planning with HQIM use the connection planning supports to find ways to support students in making explicit connections within their study of mathematics.

Multi-Layered System of Supports/Suggested Instructional Strategies

What: The section on Multi-Layered Systems of Supports (MLSS)/Suggested Instructional Strategies is designed to support teachers in planning for the needs of all students. Each section includes options for pre-teaching, reteaching, extensions and universal supports for students. Targeted pre-teaching and reteaching support student's acquisition of the knowledge and skills identified in the New Mexico Mathematics Standards to support student success with

high-quality differentiated instruction. Intensive supports may be provided for a longer duration, more frequently, smaller groups, or otherwise be more intensive than targeted supports. Progress monitoring should occur to assess students' responses to additional supports, see [Standards Aligned Instructionally Embedded Formative Assessment Resources](#).

Why: MLSS is a holistic framework that guides educators, those closest to the student, to intervene quickly when students need additional supports. The framework moves away from the "wait to fail" model and empowers teachers to use their professional judgement to make data-informed decisions regarding the students in their classrooms to ensure academic success with the grade level expectations of the New Mexico Mathematics Standards.

How: When planning with your HQIM use the suggestions for pre-teaching as a starting point to determine if some or all of the students in your classroom may need targeted or intensive pre-teaching at the start of a unit to ensure they can access the grade level material with the unit. The core-instruction and reteach sections work together to support planning within a unit, look for the ways the materials are supporting greater access for all students and provide options to revisit materials based on formative assessments. The planning supports for each cluster are grounded in the [Universal Design Learning \(UDL\) Framework](#), additional planning supports based on this framework can be found in Section 3 of this document in the part titled, [Planning Guidance for Multi-Layered Systems of Support: Core Instruction](#).

Culturally and Linguistically Responsive Instruction

What: Culturally and Linguistically Responsive Instruction (CLRI), or the practice of situational appropriateness, requires educators to contribute to a positive school climate by validating and affirming students' home languages and cultures. Validation is making the home culture and language legitimate, while affirmation is affirming or making clear that the home culture and language are positive assets. It is also the intentional effort to reverse negative stereotypes of non-dominant cultures and languages and must be intentional and purposeful, consistent and authentic, and proactive and reactive. Building and bridging is the extension of validation and affirmation. By building and bridging students learning to toggle between home culture and linguistic behaviors and expectations and the school culture and linguistic behaviors and expectations. The building component focuses on creating connections between the home culture and language and the expectations of school culture and language for success in school. The bridging component focuses on creating opportunities to practice situational appropriateness or utilizing appropriate cultural and linguistic behaviors.⁷

Why: The mathematical identities of students are shaped by the messages they receive about their ability to do mathematics and the power of mathematics in their lives outside of school.⁸ Mathematics educators must intentionally and purposefully legitimize the home culture and languages of students and reverse the negative stereotypes regarding the mathematical abilities of students of marginalized cultures and languages. In addition, create connections between the cultural and linguistic behaviors of your students' home culture and language and the culture and language of school mathematics to supports students in creating mathematical identities as capable mathematicians within school and society.

How: When planning instruction is critical to consider ways to validate/affirm and build/bridge from your students cultural and linguistic assets. The planning supports for each cluster provide an example of how to support equity based teaching practices. Look for additional ways within your HQIM to ensure all students develop strong mathematical identities.

Assessment Guide

What: Formative Assessment is the planned, ongoing process used by all students and teachers during learning and teaching to elicit and use evidence of student learning to improve student understanding of the outcomes and support students to become directed learners. All New Mexico educators have access to standards aligned instructionally embedded formative assessments: Eureka Math at K-2; Cognia at 3-8, and the SAT Suite Question Bank at 9-12. These are intended to be used during instruction for each grade alongside assessments within your HQIM.

Why: When student thinking is made visible the teacher can examine the progression of learning towards the goals of the standards and adjust instruction as necessary. By including students in the assessment and analysis process students become strategic and goal-directed with their learning.

How: The planning supports at each cluster provide an example of a task that addresses one more aspect of the cluster of standards. This example can be used to discuss possible responses by students and next steps for

instruction. A similar process can then be used to identify additional items from one of the formative assessment resources provided by NMPED and your HQIM.

Relevance to Families and Communities

What: Relevance to families and communities requires finding the relevance of mathematics outside of the classroom by connecting to families and communities and learning about varied and often unexpected ways they use mathematics.

Why: When school mathematics is connected to the mathematics outside of school students can build a bridge between their ways of thinking about quantities outside and inside school creating a bridge between home and school.

How: When planning at the year and unit level with you HQIM find ways to intentionally learn from your families and communities the cultural and linguistic ways they use mathematics outside of school.

Cross-Curricular Connections

What: New Mexico defines cross-curricular connections as connections between two or more areas of study made by teachers or students within the structure of a subject.

Why: The purpose of planning cross-curricular connections in an instructional sequence is to ensure that students build connections and recognize the relevance of mathematics beyond the mathematics classroom.

How: When planning with HQIM look for opportunities to make explicit connections to other content areas such as the examples provided for each cluster.

⁷Hollie, S. (2011). *Culturally and linguistically responsive teaching and learning*. Teacher Created Materials. ⁸Aguirre, J. M., Mayfield-Ingram, K., & Martin, D. B. (2013). *The impact of identity in K-8 mathematics learning and teaching: rethinking equity-based practices*. Reston, VA: National Council of Teachers of Mathematics. (P. 14)

Template of the New Mexico Cluster Level Planning Support for the New Mexico Mathematics Standards

| <i>Grade</i> | <i>CCSS Domain</i> | <i>CCSS Cluster</i> |
|--------------------------|--|--|
| | | Cluster Statement: Statement from New Mexico Mathematics Standards summarize a group of related standards. |
| Cluster Standard: | | |
| | Standard | Standards for Mathematical Practice |
| | Full text of the standard | The Standards for Mathematical Practice describe varieties of expertise that mathematics educators at all levels should seek to develop in their students. |
| | Clarification Statement | Students Who Demonstrate Understanding Can... |
| | Clarifies the language of the standard | The cognitive skills students perform to demonstrate comprehension of a standard. |
| | DOK | Blooms |
| | Correlation of standard to Webb's Depth of Knowledge | Correlation of standard to Bloom's Taxonomy |

| Common Misconceptions |
|--|
| <ul style="list-style-type: none"> Guidance on where a student misconception or misunderstanding could potentially occur. |

| ASSESSMENT GUIDE |
|---|
| Includes reference to high-quality formative assessment resources, including examples from New Mexico's formative assessment banks. |

| <i>Grade</i> | <i>CCSS Domain</i> | <i>CCSS Strand</i> |
|--------------|--|--------------------|
| | | |
| | Sample Task #1 (Constructed Response) | |
| | | |
| | Sample Task #2 (Multiple Choice) | |
| | | |

| Culturally and Linguistically Responsive Instruction Provides equity based instructional suggestions aligned to the cluster of standards | |
|--|--|
| Relevance to Families and Communities | Connecting with families and communities to create relevant connections between mathematics inside and outside of school. |
| Cross-Curricular Connections | Includes examples of how the cluster provides opportunities to connect to other disciplines such as literacy, science, social studies, and the arts. |

Planning for Multi-Layered System of Supports

Vertical Alignment

| <i>Previous Learning</i> | <i>Current Learning</i> | <i>Future Learning</i> |
|--|--|---|
| <ul style="list-style-type: none">• Supports student connections to learning from previous grade levels. | <ul style="list-style-type: none">• Supports student connections to learning within the grade level. | <ul style="list-style-type: none">• Supports student connections to learning in a future grade. |