Public Education Department

The NMIS is a teacher-influenced tool, designed to provide instructional planning support at the programmatic level for districts and instructional level for teachers. Its foundation stems from the vision and mission of the PED and came into existence to assure that students in NM will be engaged in a culturally and linguistically responsive educational system that meets the social, emotional, and academic needs of ALL students. This is also rooted in the belief that all students must have access to on-grade-level standards, focusing on acceleration. The purpose of this tool is to help educators understand each of the grade level standards and how those standards connect to the students' overall preparation for college and career readiness.

Standards are defined as the most critical prerequisite skills and knowledge. This document is color-coded to reflect both anchor and priority standards. Though previous emphasis was placed on priority standards to address lost learning due to COVID-19, New Mexico teachers should note that moving forward, while priority standards allow for acceleration of learning, **all** standards should be addressed in instruction throughout the school year.

In this guide you will find:
- A breakdown of each of the grade level standards within the cluster, including:
  - Standards of Mathematical Practice
  - Common Misconceptions
  - Identification of Priority Standards, as identified by NMPED.
  - Level of Rigor Identification
- Sample aligned assessment items
- Suggested Student Discourse Guide **(only provided for clusters with Conceptual Understanding standards)**
- A multilayered system of supports (MLSS) and culturally and linguistically responsive instruction (CLR) guide

Key		
■	*Priority Standard*	Priority standards, as identified by NMPED, are denoted with red highlighting. Priority standards are the most critical prerequisite skills and knowledge a student needs. This does not mean that these are only standards required to be taught, just these are the standards that will allow for the acceleration the students of New Mexico need during this time.
	Conceptual Understanding	Conceptual Understanding standards help students build a deep understanding of the **how** and **why** of mathematics.
	Application	Application standards help students identify the appropriate concepts and skills to tackle **novel real-world problems.**
	Procedural Skill and Fluency	Procedural standards help students develop **efficiency** and **accuracy** in computations.

Standards Breakdown

- Measure and estimate lengths in standard units.
  - 2.MD.A.1
  - 2.MD.A.2
  - 2.MD.A.3
  - 2.MD.A.4
- Relate addition and subtraction to length.
  - 2.MD.B.5
  - 2.MD.B.6
- Work with time and money.
  - 2.MD.C.7
  - 2.MD.C.8
- Represent and interpret data.
  - 2.MD.D.9
  - 2.MD.D.10

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Grade	CCSS Domain	CCSS Cluster
2	**Measurement and Data**	**Measure and estimate lengths in standard units.**

📋 Cluster Standard: 2.MD.A.1

Standard	Standards for Mathematical Practice
Measure the length of an object by selecting and using appropriate tools such as rulers, yardsticks, meter sticks, and measuring tapes.	● **SMP 5:** Use appropriate tools strategically. ● **SMP 6:** Attend to precision.

Clarification Statement	Students Who Demonstrate Understanding Can...
● It is vital that students learn that "one" represents the space from the beginning of the ruler to the hash mark, not the hash mark itself.	● Identify the location of zero, not always at the end of the measuring tool, and explain the role of zero in measuring an object. ● Recognize that the numbers on measurement tools are equally spaced. ● Identify that the length of an object is the number of same size units the object spans with no gaps or overlaps. ● Choose an appropriate tool to measure the length of objects. ● Explain why a specific measurement tool is best for a given situation.

DOK	Blooms
2	Remember, Understand, and Apply

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Grade	CCSS Domain	CCSS Cluster
2	**Measurement and Data**	**Measure and estimate lengths in standard units.**

📋 Cluster Standard: 2.MD.A.2

Standard	Standards for Mathematical Practice
Measure the length of an object twice, using length units of different lengths for the two measurements; describe how the two measurements relate to the size of the unit chosen.	• **SMP 3:** Construct viable arguments and critique the reasoning of others. • **SMP 5:** Use appropriate tools strategically.

Clarification Statement	Students Who Demonstrate Understanding Can...
• To learn measurement concepts and skills, students might use both simple rulers (e.g., having only whole units such as centimeters or inches) and physical units (e.g., manipulatives that are centimeter or inch lengths). • Students can learn that the larger the unit, the fewer number of units in a given measurement. That is, for measurements of a given length there is an **inverse relationship** between the size of the unit of measure and the number of those units. This is the time that measuring and reflecting on measuring the same object with different units, both **standard and nonstandard**, is likely to be most productive. • Students can also use the concept of unit to make inferences about the relative sizes of objects; for example, if object A is 10 regular paper clips long and object B is 10 jumbo paper clips long, the number of units is the same, but the units have different sizes, so the lengths of A and B are different.	• Use the terms length and measure precisely. • Measure an object using two different tools. • Describe two different measurements of one object and the relationship between the measurement and the unit length.

DOK	Blooms
3	Remember, Understand, and Apply

Public Education Department

Grade	CCSS Domain	CCSS Cluster
2	**Measurement and Data**	**Measure and estimate lengths in standard units.**

📋 Cluster Standard: 2.MD.A.3

Standard	Standards for Mathematical Practice
Estimate lengths using units of inches, feet, centimeters, and meters.	● **SMP 2:** Reason abstractly and quantitatively.

Clarification Statement	Students Who Demonstrate Understanding Can...
● Although **"guess and check"** experiences can be useful, research suggests explicit teaching of **estimation** strategies (such as iteration of a mental image of the unit or comparison with a known measurement) and prompting students to learn **reference or benchmark lengths** (e.g., an inch-long piece of gum, a 6-inch dollar bill), order points along a continuum, and build up mental rulers.	● Use mental and visual information to determine a measurement without using a measurement tool. ● Justify the reasonableness of an estimate. ● Choose an appropriate unit of measurement to estimate.

DOK	Blooms
2	Apply and Evaluate

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Grade	CCSS Domain	CCSS Cluster
2	**Measurement and Data**	**Measure and estimate lengths in standard units.**

📋 Cluster Standard: 2.MD.A.4

Standard	Standards for Mathematical Practice
Measure to determine how much longer one object is than another, expressing the length difference in terms of a standard-length unit.	● **SMP 5**: Use appropriate tools strategically.

Clarification Statement	Students Who Demonstrate Understanding Can...
● Second graders learn to combine and compare lengths using arithmetic operations. That is, they can add two lengths to obtain the length of the whole and subtract one length from another to find out the difference in lengths.	● Choose an appropriate tool to measure the length of objects. ● Compare two quantities by finding their difference in length. ● Explain how many units longer one object is compared to another object.

DOK	Blooms
2	Apply, Analyze, and Evaluate

Common Misconceptions

● Students beginning the measurement count at the "1" mark on a ruler rather than the "0" and not accounting for it. ● Students not iterating the unit accurately, leaving gaps or overlapping.	● Students selecting the incorrect unit of measure (e.g., when asked for centimeters, learner measures in inches). ● Students believing the numbers on a ruler are counting the marks as opposed to the space between the marks.

Grade	CCSS Domain	CCSS Cluster
2	**Measurement and Data**	**Relate addition and subtraction to length.**

💡 Cluster Standard: 2.MD.B.5

Standard	Standards for Mathematical Practice
Use addition and subtraction within 100 to solve word problems involving lengths that are given in the same units, e.g., by using drawings (such as drawings of rulers) and equations with a symbol for the unknown number to represent the problem.	● **SMP 1:** Make sense of problems and persevere in solving them. ● **SMP 4:** Model with mathematics.

Clarification Statement	Students Who Demonstrate Understanding Can...
● As an arithmetic example, students might measure all the sides of a table with unmarked (foot) rulers to measure how much ribbon they would need to decorate the perimeter of the table.	● Recognize that when adding or subtracting lengths, the measurement units must be the same. ● Represent measurement problems using drawings and equations. ● Solve length word problems by adding or subtracting measurements within 100. ● Write an equation for a word problem involving length and represent the unknown number with a symbol.

DOK	Blooms
2	Remember, Apply, and Evaluate

Grade	CCSS Domain	CCSS Cluster
2	**Measurement and Data**	**Relate addition and subtraction to length.**

Cluster Standard: 2.MD.B.6

Standard	Standards for Mathematical Practice
Represent whole numbers as lengths from 0 on a number line diagram with equally spaced points corresponding to the numbers 0, 1, 2, ..., and represent whole-number sums and differences within 100 on a number line diagram.	• **SMP 2:** Reason abstractly and quantitatively. • **SMP 4:** Model with mathematics.

Clarification Statement	Students Who Demonstrate Understanding Can...
• To use a number line diagram to understand number and number operations, students need to understand that number line diagrams have specific conventions: the use of a single position to represent a whole number and the use of marks to indicate those positions. They need to understand that a number line diagram is like a ruler in that consecutive whole numbers are 1 unit apart, thus they need to consider the distances between positions and segments when identifying missing numbers.	• Create a number line to show whole numbers using equally spaced marks. • Represent addition and subtraction problems on a number line diagram. • Solve addition and subtraction problems using a number line diagram.

DOK	Blooms
1-2	Remember, Universe, and Apply

Common Misconceptions

● Students may have misconceptions about how to express the way they solved a problem using an equation.	● Students may not understand they could jump by more than ones on a number line to add or subtract.

Grade	CCSS Domain	CCSS Cluster
2	**Measurement and Data**	**Work with time and money.**

📋 Cluster Standard: 2.MD.C.7

Standard	Standards for Mathematical Practice
Tell and write time from analog and digital clocks to the nearest five minutes, using a.m. and p.m.	● **SMP 6**: Attend to precision. ● **SMP 7:** Look for and make use of structure.
Clarification Statement	**Students Who Demonstrate Understanding Can...**
● The mathematics in this cluster focuses on telling time and solving word problems involving money. ● Students are introduced to time in 1st grade and they capstone their work with time in third grade.	● Explain the difference between a.m. and p.m. and identify activities appropriate for both. ● Read or say the time given a digital or analog clock (minutes displayed as a multiple of 5). ● Translate time on an analog clock to a digital clock and vice-versa, including drawing the appropriate hands on an analog clock (minutes displayed as a multiple of 5). ● Write the time and draw the appropriate hands on an analog clock when verbally told what time it is to the nearest 5 mi. ● Use specialized language such as half past, quarter after/past, quarter to, minutes after/past and minutes to when telling time.
DOK	**Blooms**
1	Remember and Understand

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Grade	CCSS Domain	CCSS Cluster
2	**Measurement and Data**	**Work with time and money.**

📋 Cluster Standard: 2.MD.C.8

Standard	Standards for Mathematical Practice
Solve word problems involving dollar bills, quarters, dimes, nickels, and pennies, using $ and ¢ symbols appropriately. *Example: If you have 2 dimes and 3 pennies, how many cents do you have?*	● **SMP 1:** Make sense of problems and persevere in solving them. ● **SMP 2:** Reason abstractly and quantitatively. ● **SMP 7:** Look for and make use of structure.
Clarification Statement	**Students Who Demonstrate Understanding Can...**
● The mathematics in this cluster focuses on telling time and solving word problems involving money. ● Students are introduced to time in 1st grade and they capstone their work with time in third grade.	● Identify and name dollar bills, quarters, dimes, nickels and pennies and their values. ● Solve word problems involving money. ● Use money symbols such as $ and ¢ correctly. ● Show the same money value in different ways.
DOK	**Blooms**
2	Remember and Apply

Common Misconceptions

● Students might mix up the hour and minute hands. ● Students may not understand they need to "move" the hour hand when drawing the hands on an analog clock for a time other than "o'clock" (e.g., representing 2:00, 2:15, and 2:45 with the same hour hand). ● Students may focus on counting objects rather	● Students might mix up the hour and minute hands. ● Students may not understand they need to "move" the hour hand when drawing the hands on an analog clock for a time other than "o'clock" (e.g., representing 2:00, 2:15, and 2:45 with the same hour hand). ● Students may focus on counting objects rather

than value when working with coins.	than value when working with coins.

Grade	CCSS Domain	CCSS Cluster
2	**Measurement and Data**	**Represent and interpret data.**

📋 Cluster Standard: 2.MD.D.9

Standard	Standards for Mathematical Practice
Generate measurement data by measuring lengths of several objects to the nearest whole unit, or by making repeated measurements of the same object. Show the measurements by making a line plot, where the horizontal scale is marked off in whole-number units.	**SMP 4:** Model with mathematics. **SMP 5:** Use appropriate tools strategically.
Clarification Statement	**Students Who Demonstrate Understanding Can...**
	- Measure and record the lengths of several objects to the nearest whole-number. - Create a line plot with a horizontal scale marked off in whole-number units. - Record length measurements on a line plot.
DOK	**Blooms**
2	Remember, Apply, and Analyze

Grade	CCSS Domain	CCSS Cluster
2	**Measurement and Data**	**Represent and interpret data.**

📋 Cluster Standard: 2.MD.D.10

Standard	Standards for Mathematical Practice
Draw a picture graph and a bar graph (with single-unit scale) to represent a data set with up to four categories. Solve simply put-together, take-apart, and compare problems using information presented in a bar graph.	**SMP 1:** Make sense of problems and persevere in solving them. **SMP 2:** Reason abstractly and quantitatively. **SMP 4:** Model with mathematics.
Clarification Statement	**Students Who Demonstrate Understanding Can...**
Students make a **bar graph** to represent **categorical data**, then **solve addition** and **subtraction** problems based on the data.	- Collect data representing up to 4 categories - Draw a picture graph and a bar graph. - Answer questions regarding graphs up to 4 categories. - Solve simply put-together, take-apart and compare problems using the information presented in a bar graph.
DOK	**Blooms**
2	Understand, Apply, and Analyze

Common Misconceptions

Students may think marking an X on the line plot in different sizes means different quantities.	Students may not understand how the graph represents the data they collected.

Student Discourse Guide

- **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). Purposeful implementation of classroom discourse allows students to activate funds of knowledge and to refine their mathematical understanding. 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.**
- **Discourse that focuses on tasks that promote reasoning and problem solving is a primary mechanism for developing conceptual understanding and meaningful learning of mathematics (Michaels, O'Connor, and Resnick, 2008)**

Domain: **Measurement and Data**	Strand: **Relate addition and subtraction to length**.

Suggested Student Discourse Questions

- Why do we need equally spaced marks when using a number line to add and subtract? - Explain how your partner's strategy could be used to reach an acceptable solution?	- Which strategy did you use to solve the problem using the number line? - Where do you normally number lines outside of school?

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ASSESSMENT GUIDE

- Measure and estimate lengths in standard units
- Relate addition and subtraction to length
- Work with time and money
- Represent and interpret data

Grade	CCSS Domain	CCSS Strand
2	**Measurement and Data**	**Measure and estimate lengths in standard units.**

Sample Task #1 (Constructed Response)

Look around the room to find 2 or 3 objects for each benchmark length. Write each object in the chart, and record the exact length.

Objects That Are About an Inch	Objects That Are About a Foot	Objects That Are About a Yard
1. _____ inches	1. _____ inches	1. _____ inches
2. _____ inches	2. _____ inches	2. _____ inches
3. _____ inches	3. _____ inches	3. _____ inches

Sample Task #2

Use your ruler to measure the length of the objects below in inches. Using your ruler, draw a line that is the same length as each object.

a. A marker is _____ inches.

b. Draw a line that is the same length as the marker.

Grade	*CCSS Domain*	*CCSS Strand*
2	**Measurement and Data**	**Relate addition and subtraction to length.**

<table>
<tr><td colspan="2" align="center">Sample Task #1 (Constructed Response)</td></tr>
<tr><td></td><td>

Measure and label the sides of the shape below.

Side A is _____ inches.

Side B is
_____ inches.

Side C is
_____ inches.

Side D is _____ inches.

What is the sum of the length of Side B and the length of Side C? _____ inches

</td></tr>
<tr><td colspan="2" align="center">Sample Task #2</td></tr>
<tr><td></td><td>

Measure the lines in inches and centimeters. Round the measurements to the nearest inch or centimeter.

_____ cm   _____ in

</td></tr>
</table>

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Grade	CCSS Domain	CCSS Strand
2	**Measurement and Data**	**Work with time and money.**

Sample Task #1 (Constructed Response)

Draw money to show 2 different ways to make $142, using only $1, $10, and $100 bills.

Sample Task #2

Count or add to find the total value of the group of coins.
Write the value using the ¢ or $ symbol.

Grade	CCSS Domain	CCSS Strand
2	**Measurement and Data**	**Represent and interpret data.**

Sample Task #1 (Constructed Response)

Complete the bar graph below using data provided in the table. Then, answer the questions about the data.

Animal Classification			
Birds	Fish	Mammals	Reptiles
7	12	8	6

Title: _____

0 _ _ _ _ _ _ _ _ _ _ _ _
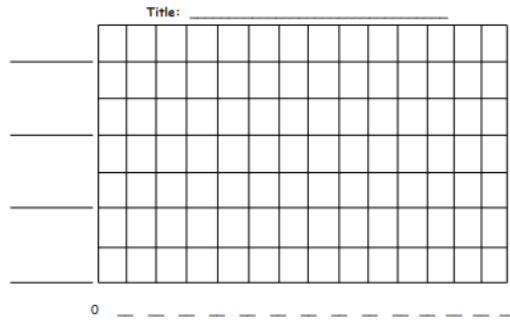
a. How many more animals are fish than reptiles? _____

b. How many more fish and mammals are there than birds and reptiles? _____

Sample Task #2

Measure the lines below in inches. Record the data using tally marks on the table provided.

Line A _____

Line B _____

Line C _____

Line D _____

Line E _____

Line F _____

Line G _____

Line Length	Number of Lines
Shorter than 5 inches	
Longer than 5 inches	
Equal to 5 inches	

MLSS AND CLR GUIDE

- Measure and estimate lengths in standard units
- Relate addition and subtraction to length
- Work with time and money
- Represent and interpret data

CCSS Domain	CCSS Cluster
Measurement and Data	**Measure and estimate lengths in standard units.**

Culturally and Linguistically Responsive Instruction

Relevance to Families and Communities	During a unit focused on measuring and estimating lengths in standard units (inches, feet, centimeters, and meters) by selecting and using appropriate tools such as rulers, yardsticks, meter sticks, and measuring tapes; describing how two measurements relate to the size of the unit chosen and measuring to determine how much longer one object is than another, consider options for learning from your families and communities the cultural and linguistic ways this mathematics exists outside of school to create stronger home to school connections for students, for example, learning about the different ways measurement and estimating lengths is used in the home and community can a be a great way to connect schools tasks with home tasks. Students may have different non-standard units of measurement that are used in the home and community. Learners may also have examples of how measurement and estimation of measurements is used in the home and the community (e.g., the length of a garden, the linear length of material for fencing or sewing).
Cross-Curricular Connections	Science: In second grade the NGSS states students should "plan and conduct an investigation to determine if plants need sunlight and water to grow." Consider providing a connection for students to measure plant growth. Language Arts: Literature can offer connections about measurement such as: *How Big is a Foot* by Rolf Myller and *How Short, How Far Away?* by David A. Adler.
Validate/Affirm/Build/ Bridge	• *How can you design your mathematics classroom to 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?* • *How can you create connections between the cultural and linguistic behaviors of your*	• Equity Based Practice (Goal Setting): Setting challenging but attainable goals with students can communicate the belief and expectation that all students can engage with interesting and rigorous mathematical content and achieve in mathematics. Unfortunately, the reverse is also true, when students encounter low expectations through their interactions with adults and the media, they may see little reason to persist in mathematics, which can create a vicious cycle of low expectations and low achievement. For example, when studying measuring and estimating lengths in standard units (inches, feet, centimeters, and meters) by selecting and using appropriate tools such as rulers, yardsticks, meter sticks, and measuring tapes; describing how two measurements relate to the size of the unit

	students' home culture and language, the culture and language of school mathematics to support students in creating mathematical identities as capable mathematicians that can use mathematics within school and society?	chosen and measuring to determine how much longer one object is than another goal setting is critical because society and cultures often negatively portray students' ability to measure and estimate lengths. For example, the media belittles and creates jokes regarding the fast-food employee who doesn't comprehend that a "foot long" menu item and a "twelve-inch" menu item are the same length. As learners set challenging, but attainable goals, they can engage with interesting and rigorous mathematical content of measurement and estimating lengths to achieve in mathematics.

Planning for Multi-Layered System of Supports

Vertical Alignment

Previous Learning	*Current Learning*	*Future Learning*
● Connect to the process of measuring objects using non-standard units, such as cubes or paperclips. **(1.MD.1)** ● Connect to the concept of comparing objects, limited to comparative terms such as shorter, longer, shortest, and longest. **(1.MD.2)**	● Connect to the transition from use of non-standard units to standard units of measure in this cluster. ● Connect to the use addition and subtraction strategies as they compare the length of objects and determine the difference. **(2.NBT.5)** ● Connect to the understanding of linear measurement to solve word problems. **(2.MD.5)**	● Connect to generate measurement data by measuring objects and showing the measurements on a line plot **(2.MD.9)** ● Connect to sub-divide lengths as they use rulers marked with halves and fourths of an inch. **(3.MD.3)** ● Connect to applying linear measurement to measure perimeter and area. **(3.MD.5-8)**

Suggested Instructional Strategies

Pre-Teach

Level of Intensity	*Essential Question*	*Examples*
Targeted	*What pre-teaching will prepare students to productively struggle with the mathematics for this cluster within your HQIM?*	For example, some learners may benefit from targeted pre-teaching that provides additional time for confusion to happen with new mathematical ideas when studying measuring and estimating lengths in standard units (inches, feet, centimeters, and meters). By selecting and

		using appropriate tools such as rulers, yardsticks, meter sticks, and measuring tapes, students can describe how two measurements relate to the size of the unit of measure chosen, and measuring to determine how much longer one object is when compared to another. Since students used non-standard units of measurement in prior grades students often misread measurement tools. When provided additional time for confusion to happen with new mathematical ideas, students could experience less stress.
Intensive	*What critical understandings will prepare students to access the mathematics for this cluster?*	1.MD.A.2: This standard provides a foundation for work with measuring and estimating lengths in standard units. Students have the opportunity to use non-standard tools and practice lining objects up with no gaps or overlaps. This will help them when using standard tools. If students have unfinished learning within this standard, based on assessment data, consider ways to provide intensive pre-teaching support prior to the start of the unit to ensure students are ready to access grade level instruction and assignments.

Universal Support Framework		
A student should know/understand...	A student should be able to do...	*Potential Scaffolds*
- The smaller the unit, the more units will be needed to measure an object. - Larger units (such as feet) can be subdivided into equivalent smaller units. - How to select an efficient tool for measurement.	- Line up a measuring tool with the end of the object and measure with no gaps or overlaps. - Compare and explain two measurements and how they are affected by the size of the unit chosen. - Measure two objects using the same standard length unit to determine their difference in length.	- Build on students' experience with the following skills: - Order three objects by length; compare the lengths of two objects indirectly by using a third object (1.MD.A.1) - Cognitive Strategies - Repeatedly model the strategies - Monitor the students' use of the strategies - Provide feedback to students - Teach self-questioning and self-monitoring strategies - Introduce multiple means of representation for mathematical ideas - Encourage students to use alternative tools to better access the grade level content. Examples include: - Rulers (1 foot ruler, yardstick, meter

		stick, measuring tape), various objects to measure.

Re-Teach		
Level of Intensity	*Essential Question*	*Examples*
Targeted	What formative assessment data (e.g., tasks, exit tickets, observations) will help identify content needing to be revisited during a unit?	Students may benefit from re-engaging with content during a unit on measuring and estimating lengths in standard units by providing specific and immediate feedback to students on their work through a short mini lesson because standard units and estimation require practice and precision.
Intensive	What assessment data will help identify content needing to be revisited for intensive interventions?	Some students may benefit from intensive extra time during and after a unit measuring and estimating lengths in standard units by addressing conceptual understanding because measurement involves spatial reasoning. Some learners may need additional guidance and practice in measurement and estimating measurement.

Extension	
Essential Question	*Examples*
What type of extension will offer additional challenges to 'broaden' your student's knowledge of the mathematics developed within your HQIM?	Some learners may benefit from an extension such as open-ended tasks linking multiple disciplines when studying measuring and estimating lengths in standard units (inches, feet, centimeters, and meters) by selecting and using appropriate tools such as rulers, yardsticks, meter sticks, and measuring tapes. Describing how two measurements relate to the size of the unit chosen and measuring to determine how much longer one object is than another, is helpful in the instruction of science and social studies mapping for students to be proficient in estimating lengths for possible projects and for distances on a map.

CCSS Domain	*CCSS Cluster*
Measurement and Data	**Relate addition and subtraction to length**

Culturally and Linguistically Responsive Instruction

Relevance to Families and Communities	During a unit focused on relating addition and subtraction to length, consider options for learning from your families and communities the cultural and linguistic ways this mathematics exists outside of school to create stronger home to school connections for students, for example, learning about the different ways you can measure items in your home and community and then compare lengths (adding/subtracting) is a great way to connect schools' tasks with home tasks. To ensure students have the opportunity to engage in high-level thinking and culturally relevant tasks, teachers must select and implement tasks that promote reasoning and problem solving (lower-level tasks are classified as memorization and procedures without connections to understanding, meaning or concepts. Both represent limited opportunities for students to understand important concepts.
Cross-Curricular Connections	Science: In second grade the NGSS states students should "plan and conduct an investigation to determine if plants need sunlight and water to grow." Consider providing a connection for students to measure plant growth and then pose addition and subtraction problems within the context of their growth. Language Arts: Literature can offer connections about measurement such as: *How Big is a Foot* by Rolf Myller and *If You Hopped Like a Frog* by David Schwartz.
Validate/Affirm/Build/ Bridge	• *How can you design your mathematics classroom to 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?* • *How can you create connections between the cultural and linguistic behaviors of your*	• Tasks: The type of mathematical tasks and instruction students receive provides the foundation for students' mathematical learning and their mathematical identity. Tasks and instruction that provide greater access to mathematics and convey the creativity of mathematics by allowing for multiple solution strategies and development of the standards for mathematical practice leads to more students viewing themselves mathematically successful capable mathematicians than tasks and instruction which define success as memorizing and repeating a procedure demonstrated by the teacher. For example, when studying and relating addition and subtraction to length the types of mathematical tasks are critical because with the increasing diversity in our classrooms, it is important for teachers to

	students' home culture and language, the culture and language of school mathematics to support students in creating mathematical identities as capable mathematicians that can use mathematics within school and society?	implement culturally relevant pedagogy and challenge students since these tasks are the basis of opportunity for students to learn.

Planning for Multi-Layered System of Supports

Vertical Alignment

Previous Learning	*Current Learning*	*Future Learning*
● Connect to using open number lines to add within 100, including adding a two-digit number and a one-digit number, and adding a two-digit number and a multiple of 10. **(1.NBT.4)**	● Connect to solving one- and two-step measurement problems. **(2.OA.1)** ● Connect to using open number lines to add and subtract within 1000. Connect to understanding number lines to include a distance model for subtraction. **(2.NBT.7)** ● Connect to generating measurement data by measuring objects and showing the measurements on a line plot. **(2.MD.9)**	● Connect to understanding a fraction as intervals between whole numbers on a number line. **(3.NF.2)**

Suggested Instructional Strategies

Pre-Teach

Level of Intensity	*Essential Question*	*Examples*
Targeted	*What pre-teaching will prepare students to productively struggle with the mathematics for this cluster within your HQIM?*	Some learners may benefit from targeted pre-teaching that rehearses prior learning when studying and relating addition and subtraction to length because it helps with students' understanding by allowing and helping them make connections to the new information. Students can access their schema and experiences to understand the

		relationship of addition and subtraction to length.
Intensive	*What critical understandings will prepare students to access the mathematics for this cluster?*	1.MD.A.1: Order three objects by length; compare the lengths of two objects indirectly by using a third object. This standard provides a foundation for work with relating addition and subtraction to length because students need to understand comparing to help with addition and subtraction using length measurements. If students have unfinished learning within this standard, based on assessment data, consider ways to provide intensive pre-teaching support prior to the start of the unit to ensure students are ready to access grade level instruction and assignments.

Universal Support Framework		
A student should know/understand...	A student should be able to do...	*Potential Scaffolds*
- Number line diagrams have specific conventions. - A number line diagram is like a ruler. - How to use a number line diagram as a measurement model and how to use strategies relating to distance, proximity of numbers and reference points.	- Solve addition and subtraction problems within 100 involving lengths. - Use drawings and equations to represent and solve length problems. - Create number lines to solve addition and subtraction problems.	- Build on students' experience with the following skills: - Measure to determine how much longer one object is than another, expressing the length difference in terms of a standard length unit (2.MD.A.4) - Cognitive Strategies - Repeatedly model the strategies. - Monitor the students' use of the strategies. - Provide feedback to students. - Teach self-questioning and self-monitoring strategies. - Introduce multiple means of representation for mathematical ideas. - Encourage students to use alternative tools to better access the grade level content. Examples include: - Rulers (1 foot ruler, yardstick, meter stick, measuring tape), various objects to measure.

Re-Teach		
Level of Intensity	*Essential Question*	*Examples*

Targeted	What formative assessment data (e.g., tasks, exit tickets, observations) will help identify content needing to be revisited during a unit?	Students may benefit from re-engaging with content during a unit on relating addition and subtraction by providing specific feedback to students on their work through a short mini lesson because providing students with meaningful feedback can greatly enhance their learning and achievement. Re-teaching will provide students with information on what exactly they did well, and what may still need improvement.
Intensive	What assessment data will help identify content needing to be revisited for intensive interventions?	Some students may benefit from intensive extra time during and after a unit on relating addition and subtraction to length by confronting student misconceptions because students will shut down if they think they are doing it wrong. Focusing on the facts and why 'right is right' gives them the detailed steps to follow to get the answer correct. We help them and re-teach them until they get the steps right.

Extension	
Essential Question	***Examples***
What type of extension will offer additional challenges to 'broaden' your student's knowledge of the mathematics developed within your HQIM?	Some learners may benefit from an extension such as in-depth, self-directed exploration of self-selected topics when studying and relating addition and subtraction to length because it gives students opportunities to teach themselves new skills of how to learn and apply to other content areas. Self-selected topics and learning can improve thinking skills, research skills, self-management skills, social skills, and communication skills and allows for further independent practice.

CCSS Domain	CCSS Cluster
Measurement and Data	**Work with time and money**
Culturally and Linguistically Responsive Instruction	
Relevance to Families and Communities	During a unit focused on working with time and money, consider options for learning from your families and communities the cultural and linguistic ways this mathematics exists outside of school to create stronger home to school connections for students, for example, learning about the different ways money is used in the home and community

	can a be a great way to connect schools' tasks with home tasks. Creating opportunities for tasks such as open-ended money word problems which might involve a series of steps and representations including symbolism, graphs, and manipulatives (coin and clocks).
Cross-Curricular Connections	Social Studies: In second grade the New Mexico Social Studies Standards state students should "sequence historical events". Consider providing a connection for students to look at the value of common household items in different years. Language Arts: Literature can offer connections about measurement such as: *The Penny Pot* by Stuart J. Murphy and *The Clock Struck One* by Trudy Harris.
Validate/Affirm/Build/ Bridge	● *How can you design your mathematics classroom to 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?* ● *How can you create connections between the cultural and linguistic behaviors of your students' home culture and language, the culture and language of school mathematics to support students in creating mathematical identities as capable mathematicians that can use mathematics within school and society?* ● Procedural Fluency from Conceptual Understanding: Instruction should build from conceptual understanding to allow students opportunities to make meaning of mathematics before focusing on procedures. When new learning begins with procedures it privileges those with strong prior familiarity with school mathematics procedures for solving problems and does not allow learning to build for more methods for solving tasks that occur outside of school mathematics. For example, when studying working with time and money the types of mathematical tasks are critical because students need real life experience engaging with money and time. They need practice looking at and talking about it within its everyday uses.

Planning for Multi-Layered System of Supports

Vertical Alignment

Previous Learning	*Current Learning*	*Future Learning*
● Connect to telling time to the	● Connect to skip count by 5s	● Connect to telling and writing

hour and half-hour using analog and digital clocks. **(1.MD.3)**	and 10s. **(2.NBT.2)** ● Connect to applying knowledge of one- and two-step word problems to a variety of contexts and domains, including money. **(2.OA.1), (2.NBT.5) (2.MD.5)**	time to the nearest minute. **(3.MD.1)** ● Connect to solving word problems using all four operations with measurement quantities. **(3.OA.3, 3.OA.8)**

Suggested Instructional Strategies

Pre-Teach

Level of Intensity	*Essential Question*	*Examples*
Targeted	*What pre-teaching will prepare students to productively struggle with the mathematics for this cluster within your HQIM?*	Some learners may benefit from targeted pre-teaching that uses images/resources (especially those being used the first time) when studying time and money. Money and clocks are items they have seen and have around them daily. Giving them connections and vocabulary will help them talk about the math they are doing.
Intensive	*What critical understandings will prepare students to access the mathematics for this cluster?*	1MD.B.3: This standard provides a foundation for work with time to the hour and half hour because students need to have an understanding of hour and minute hands so they can move from hour and half hour to now 5-minute intervals. If students have unfinished learning within this standard, based on assessment data, consider ways to provide intensive pre-teaching support prior to the start of the unit to ensure students are ready to access grade level instruction and assignments.

Re-Teach

Level of Intensity	*Essential Question*	*Examples*
Targeted	What formative assessment data (e.g., tasks, exit tickets, observations) will help identify content needing to be revisited during a unit?	Students may benefit from re-engaging with content during a unit on time and money by providing specific feedback to students on their work through a short mini lesson because providing students with meaningful feedback can greatly enhance their learning and achievement. Re-teaching by providing students with information on what exactly they did well, and what may

		still need improvement.
Intensive	What assessment data will help identify content needing to be revisited for intensive interventions?	Some students may benefit from intensive extra time during and after a unit on time and money by confronting student misconceptions because students will shut down if they think they are doing it wrong. Focusing on the facts and why 'right is right' gives them the detailed steps again to follow to get the answer correct. We help them and re-teach them until they get the steps right.

Extension	
Essential Question	***Examples***
What type of extension will offer additional challenges to 'broaden' your student's knowledge of the mathematics developed within your HQIM?	Some learners may benefit from an extension such as in-depth, self-directed exploration of self-selected topics when studying time and money because it gives students opportunities to teach themselves new skills of how to learn and apply to other content areas. Self-selected topics and learning can improve thinking skills, research skills, self-management skills, social skills, and communication skills and allows for further independent practice.

Public Education Department

CCSS Domain	CCSS Cluster
Measurement and Data	**Represent and interpret data.**

Culturally and Linguistically Responsive Instruction

Relevance to Families and Communities	During a unit focused on representing and interpreting data by generating measurement data by measuring the lengths of several objects to the nearest whole unit, or by making repeated measurements of the same object and show the measurements by making a line plot, where the horizontal scale is marked off in whole-number units and drawing picture and bar graphs to represent a data set with up to four categories, consider options for learning from your families and communities the cultural and linguistic ways this mathematics exists outside of school to create stronger home to school connections for students, for example, learning about the mathematics used within the different careers of your family and community can provide a strong connections between school and careers.
Cross-Curricular Connections	Science: In second grade the NGSS states students should "plan and conduct an investigation to determine if plants need sunlight and water to grow." Consider providing a connection for students to measure plant growth and record and analyze their data. Social Studies: In second grade the New Mexico Social Studies Standards state students should "compare similarities of the history of peoples in North America through literature (e.g., story-telling, fables, folktales, fairy tales)". Consider providing a connection for students to compare these similarities by displaying and analyzing the data.
Validate/Affirm/Build/ Bridge	*How can you design your mathematics classroom to 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?* *How can you create connections between the cultural and linguistic behaviors of your students' home culture and language, the culture and language of*	Facilitating Meaningful Mathematical Discourse: Mathematics discourse requires intentional planning to ensure all students feel comfortable to share, consider, build upon and critique the mathematical ideas under consideration. When student ideas serve as the basis for discussion, we position them as knowers and doers of mathematics by using equitable talk moves students and attending to the ways students talk about who is and isn't capable of mathematics, we can disrupt the negative images and stereotypes around mathematics of marginalized cultures and languages. "A discourse-based mathematics classroom provides stronger access for every student — those who have an immediate answer or approach to share, those who have begun to formulate a mathematical approach to a task but have not fully developed their thoughts, and those who may not have an approach but can provide feedback to others." For example, when studying

	school mathematics to support students in creating mathematical identities as capable mathematicians that can use mathematics within school and society?	representing and interpreting data by generating measurement data by measuring the lengths of several objects to the nearest whole unit, or by making repeated measurements of the same object and show the measurements by making a line plot, where the horizontal scale is marked off in whole-number units and drawing picture and bar graphs to represent a data set with up to four categories facilitating meaningful mathematical discourse is critical because as learners are given the opportunity to have connections with real-life situations in which measurement and data can be used in a variety of situations without the negative images and stereotypes around mathematics, they are validating that this skill is legitimate in all cultures. Students may experience many ways that measurement is used from the units (feet, inches, yards, meters, centimeters) to tasks such as sewing, carpentry, design. Line plots, picture graphs, and bar graphs to represent a data set are not only useful in academia, but also in business and society.

Planning for Multi-Layered System of Supports

Vertical Alignment

Previous Learning	*Current Learning*	*Future Learning*
● Connect to developing the skills to accurately measure objects using non-standard units of measure **(1.MD.2)** ● Connect to organizing and representing data in ways that make sense to students and asking and answering questions about the data. **(1.MD.4)**	● Connect to solving simply put-together, take-apart, and compare problems. **(2.OA.1)** ● Connect to other measurement work, as the count scale in a bar graph is a segment of a number line diagram and can be used to represent sums and differences. **(2.MD.6)**	● Connect to collecting and representing measurement data to include fractions. **(3.MD.4)**

Suggested Instructional Strategies

Pre-Teach

Level of Intensity	*Essential Question*	*Examples*
Targeted	*What pre-teaching will prepare students to productively struggle with the mathematics for this cluster within your HQIM?*	Some learners may benefit from targeted pre-teaching that rehearses prior learning when studying representing and interpreting data by generating measurement data by measuring the lengths of several objects to the nearest whole unit, or by making repeated measurements of the same object and show the measurements by making a line plot, where the horizontal scale is marked off in whole-number units and drawing picture and bar graphs to represent a data set with up to four categories because students may need practice in generating categories, reading a tape measure, ruler, yardstick, or meterstick. Students also may need to be explicitly guided to the concept that a line plot with a horizontal scale is like what they used in prior grades as a number line with whole number units.
Intensive	*What critical understandings will prepare students to access the mathematics for this cluster?*	K.MD.B.3: This standard provides a foundation for work with drawing picture and bar graphs to represent a data set with up to four category because students must be capable of first categorizing items to be able to successfully draw picture graphs and bar graphs to represent the data set with up to four categories. If students have unfinished learning within this standard, based on assessment data, consider ways to provide intensive pre-teaching support prior to the start of the unit to ensure students are ready to access grade level instruction and assignments.
Re-Teach		
Level of Intensity	*Essential Question*	*Examples*
Targeted	What formative assessment data (e.g., tasks, exit tickets, observations) will help identify content needing to be revisited during a unit?	Students may benefit from re-engaging with content during a unit on representing and interpreting data by generating measurement data by measuring the lengths of several objects to the nearest whole unit, or by making repeated measurements of the same object and show the measurements by making a line plot, where the horizontal scale is marked off in whole-number units and drawing picture and bar graphs to represent a data set with up to four categories, by providing specific feedback to students on their work through a short mini-lesson. Students often do not attend to precision when reading measurements on a ruler, tape measure, yardstick, or

		meterstick; therefore, students need reinforcement that they are correctly and accurately reading measurements in order to be successful in this cluster. Students must often be shown where to begin and end the measurement when using the tools; for example, students often begin reading at the beginning of the tool instead of where the 0 mark is indicated.
Intensive	What assessment data will help identify content needing to be revisited for intensive interventions?	Some students may benefit from intensive extra time during and after a unit representing and interpreting data by generating measurement data by measuring the lengths of several objects to the nearest whole unit, or by making repeated measurements of the same object and show the measurements, by making a line plot, where the horizontal scale is marked off in whole-number units and drawing picture and bar graphs to represent a data set with up to four categories by confronting student misconceptions because each standard within this cluster necessitates attending to precision. Students may need one-on-one instruction or peer-tutoring to successfully read measurement tools. They may also require additional time and practice to accurately read measuring tools. Students may need differentiated scaffolding in the creation of line plots and bar graphs, perhaps beginning with a template and working toward individual construction of the line plot or bar graph with a horizontal scale marked off in whole-number units.

Extension	
Essential Question	***Examples***
What type of extension will offer additional challenges to 'broaden' your student's knowledge of the mathematics developed within your HQIM?	Some learners may benefit from an extension such as the opportunity to understand concepts more quickly and explore them in greater depth than other students. when studying representing and interpreting data by generating measurement data by measuring the lengths of several objects to the nearest whole unit, or by making repeated measurements of the same object and show the measurements by making a line plot, where the horizontal scale is marked off in whole-number units and drawing picture and bar graphs to represent a data set with up to four categories because some students are naturally prone to investigate data. Students could measure more objects as they predict which items would be the same measurement or the same difference of

	measurement from other objects investigated.