




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.

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
- A [multilayered system of supports \(MLSS\) and culturally and linguistically responsive instruction \(CLR\) guide](#)


Key		
	<i>Priority Standard</i>	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.
	<i>Conceptual Understanding</i>	Conceptual Understanding standards help students build a deep understanding of the how and why of mathematics.
	<i>Application</i>	Application standards help students identify the appropriate concepts and skills to tackle novel real-world problems .
	<i>Procedural Skill and Fluency</i>	Procedural standards help students develop efficiency and accuracy in computations.

Standards Breakdown

- Solve problems involving measurement and conversion of measurements
 - [4.MD.A.1](#)
 - [4.MD.A.2](#)
 - [4.MD.A.3](#)
- Represent and interpret data
 - [4.MD.B.4](#)
- Geometric measurement: understand concepts of angle and measure angles
 - [4.MD.C.5](#)
 - [4.MD.C.6](#)
 - [4.MD.C.7](#)


Grade	CCSS Domain	CCSS Cluster
4	Measurement and Data	Solve problems involving measurement and conversion of measurements
 Cluster Standard: 4.MD.A.1		
Standard		Standards for Mathematical Practice
<p>Know relative sizes of measurement units within one system of units including km, m, cm; kg, g; lb, oz.; l, ml; hr, min, sec. Within a single system of measurement, express measurements in a larger unit in terms of a smaller unit. Record measurement equivalents in a two column table. For example, know that 1 ft is 12 times as long as 1 in. Express the length of a 4 ft snake as 48 in. Generate a conversion table for feet and inches listing the number pairs (1, 12), (2, 24), (3, 36) ...</p>		<ul style="list-style-type: none"> ● SMP 1: Make sense of problems and persevere in solving them. ● SMP 2: Reason abstractly and quantitatively. ● SMP 6: Attend to precision.
Clarification Statement		Students Who Demonstrate Understanding Can...
<ul style="list-style-type: none"> ● Relating units within the metric system is another opportunity to think about place value. For example, students need to be able to create a table that shows measurements of the same lengths in centimeters and meters. 		<ul style="list-style-type: none"> ● Recognize the relationship between kilometers, meters, and centimeters. ● Recognize the relationship between yards, feet, and inches. ● Recognize the relationship between pounds and ounces. ● Recognize the relationship between hours, minutes, and seconds. ● Recognize the relationship between liters and milliliters. ● Express measurements in a large unit in terms of a smaller unit by recording measurements equivalent in a two-column table.
DOK		Blooms
1		Remember, Understand

Grade	CCSS Domain	CCSS Cluster
4	Measurement and Data	Solve problems involving measurement and conversion of measurements
 Cluster Standard: 4.MD.A.2		
Standard		Standards for Mathematical Practice
<p>Use the four operations to solve word problems involving distances, intervals of time, liquid volumes, masses of objects, and money, including problems involving simple fractions or decimals, and problems that require expressing measurements given in a larger unit in terms of a smaller unit. Represent measurement quantities using diagrams such as number line diagrams that feature a measurement scale.</p>		<ul style="list-style-type: none"> ● SMP 1: Make sense of problems and persevere in solving them. ● SMP 4: Model with mathematics. ● SMP 6: Attend to precision.
Clarification Statement		Students Who Demonstrate Understanding Can...
<ul style="list-style-type: none"> ● Students combine competencies from different domains as they solve measurement problems using all four arithmetic operations: addition, subtraction, multiplication, and division. For example, “How many liters of juice does the class need to have at least 35 cups if each cup takes 225 ml?” Students may use tape or number line diagrams for solving such problems (MP1). 		<ul style="list-style-type: none"> ● Solve word problems involving elapsed time, liquid volume, mass and money involving the operations of addition, subtraction, multiplication and division and including whole numbers, fractions and decimals within the 4th Grade Standards. ● Represent a word problem involving elapsed time, liquid volume, mass or money using a diagram that features a measurement scale, such as number line diagrams. ● Express measurements in a large unit in terms of a smaller unit by recording measurements equivalent in a two-column table.
DOK		Blooms
1-2		Understand, Apply and Analyze

Grade	CCSS Domain	CCSS Cluster
4	Measurement and Data	Solve problems involving measurement and conversion of measurements
 Cluster Standard: 4.MD.A.3		
Standard		Standards for Mathematical Practice
<p>Apply the area and perimeter formulas for rectangles in real world and mathematical problems. For example, find the width of a rectangular room given the area of the flooring and the length, by viewing the area formula as a multiplication equation with an unknown factor.</p>		<ul style="list-style-type: none"> ● SMP 1: Make sense of problems and persevere in solving them. ● SMP 7: Look for and make use of structure. ● SMP 8: Look for and express regularity in repeated reasoning.
Clarification Statement		Students Who Demonstrate Understanding Can...
<ul style="list-style-type: none"> ● Such abstraction and use of formulas underscores the importance of distinguishing between area and perimeter in Grade 3 (3.MD.8 3) and maintaining the distinction in Grade 4 and later grades, where rectangle perimeter and area problems may get more complex and problem solving can benefit from knowing or being able to rapidly remind oneself of how to find an area or perimeter. By repeatedly reasoning about how to calculate areas and perimeters of rectangles, students can come to see area and perimeter formulas as summaries of all such calculations (MP8). 		<ul style="list-style-type: none"> ● Apply the area formula to real-world and mathematics problems. ● Apply the perimeter formula to real-world and mathematical problems. ● Find an unknown length or width in an area problem by recognizing the area formula as a multiplication equation with an unknown factor. ● Find an unknown length or width in a perimeter problem by recognizing the perimeter formula as an addition equation with an unknown factor.
DOK		Blooms
1-2		Understand, Apply and Analyze

Common Misconceptions


- | | |
|--|--|
| <ul style="list-style-type: none"> Students may believe that larger units will give larger measures (as opposed to the larger the unit, the smaller the number you get when you measure). | <ul style="list-style-type: none"> Students may confuse area and perimeter. |
|--|--|

Grade	CCSS Domain	CCSS Cluster
4	Measurement and Data	Represent and interpret data
 Cluster Standard: 4.MD.B.4		
Standard		Standards for Mathematical Practice
Make a line plot to display a data set of measurements in fractions of a unit ($\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{8}$). Solve problems involving addition and subtraction of fractions by using information presented in line plots. For example, from a line plot find and interpret the difference in length between the longest and shortest specimens in an insect collection.		<ul style="list-style-type: none"> SMP 1: Make sense of problems and persevere in solving them. SMP 2: Reason abstractly and quantitatively. SMP 5: Use appropriate tools strategically.
Clarification Statement		Students Who Demonstrate Understanding Can...
<ul style="list-style-type: none"> Grade 4 students learn elements of fraction equivalence and arithmetic, including multiplying a fraction by a whole number and adding and subtracting fractions with like denominators. Students can use these skills to solve problems, including problems that arise from analyzing line plots. For example, with reference to the line plot above, students might find the difference between the greatest and least values in the data. (In solving such problems, students may need to label the measurement scale in eighths so as to produce like denominators. Decimal data can also 		<ul style="list-style-type: none"> Identify benchmark fractions. Make a line plot to display a data set of measurements in fractions of a unit. Solve problems involving information presented in line plots which use fractions of a unit by adding and subtracting fractions.


be used in this grade.)	
DOK	Blooms
1-2	Remember, Apply

Common Misconceptions


<ul style="list-style-type: none"> Students may not understand that it is possible to graph with fractions. 	
--	--

Grade	CCSS Domain	CCSS Cluster
4	Measurement and Data	Geometric measurement: understand concepts of angle and measure angles
 Cluster Standard: 4.MD.C.5		
Standard	Standards for Mathematical Practice	
<p>4.MD.C.5: Recognize angles as geometric shapes that are formed wherever two rays share a common endpoint, and understand concepts of angle measurement:</p> <ul style="list-style-type: none"> 4.MD.C.5.A: An angle is measured with reference to a circle with its center at the common endpoint of the rays, by considering the fraction of the circular arc between the points where the two rays intersect the circle. An angle that turns through $\frac{1}{360}$ of a circle is called a "one-degree angle," and can be used to measure angles. 4.MD.C.5.B: An angle that turns through n one-degree angles is said to have an angle measure of n degrees 	<ul style="list-style-type: none"> SMP 4: Model with mathematics. SMP 6: Attend to precision. 	
Clarification Statement	Students Who Demonstrate Understanding Can...	

<ul style="list-style-type: none"> As with length, area, and volume, children need to understand equal partitioning and unit iteration to understand angle and turn measure. Whether defined as more statically as the measure of the figure formed by the intersection of two rays or as turning, having a given angle measure involves a relationship between components of plane figures and therefore is a property. 	<ul style="list-style-type: none"> Recognize angles as geometric shapes that are formed wherever two rays share a common endpoint. Relate angle measurement to circles. Demonstrate acute, obtuse, and right angles. Use precise vocabulary when describing angles.
DOK	Blooms
1	Remember, Understand

Grade	CCSS Domain	CCSS Cluster
4	Measurement and Data	Geometric measurement: understand concepts of angle and measure angles
 Cluster Standard: 4.MD.C.6		
Standard		Standards for Mathematical Practice
Measure angles in whole-number degrees using a protractor. Sketch angles of specified measure.		<ul style="list-style-type: none"> SMP 4: Model with mathematics. SMP 5: Use appropriate tools strategically.
Clarification Statement		Students Who Demonstrate Understanding Can...
<ul style="list-style-type: none"> If examples and tasks are not varied, students can develop incomplete and inaccurate notions. For example, some come to associate all slanted lines with 45 degree measures and horizontal and vertical lines with measures of 90 degrees. Others believe angles can be “read off” a protractor in “standard” position, that is, a base is horizontal, even if neither arm of the angle is horizontal. Measuring and then sketching many angles with no horizontal or vertical arms, perhaps initially using circular 360 protractors, can help students 		<ul style="list-style-type: none"> Recognize that angles are measured in degrees. Measure angles in whole-number degrees using a protractor. Make sketches of specified angle measures. Observe that the orientation of an angle does not affect its measure.

avoid such limited conceptions.	
DOK	Blooms
2	Understand, Apply

Grade	CCSS Domain	CCSS Cluster
4	Measurement and Data	Geometric measurement: understand concepts of angle and measure angles
 Cluster Standard: 4.MD.C.7		
Standard	Standards for Mathematical Practice	
Recognize angle measure as additive. When an angle is decomposed into non-overlapping parts, the angle measure of the whole is the sum of the angle measures of the parts. Solve addition and subtraction problems to find unknown angles on a diagram in real world and mathematical problems, e.g., by using an equation with a symbol for the unknown angle measure.	<ul style="list-style-type: none"> ● SMP 1: Make sense of problems and persevere in solving them. ● SMP 2: Reason abstractly and quantitatively. 	
Clarification Statement	Students Who Demonstrate Understanding Can...	
<ul style="list-style-type: none"> ● Students with an accurate conception of angle can recognize that angle measure is additive. As with length, area, and volume, when an angle is decomposed into non-overlapping parts, the angle measure of the whole is the sum of the angle measures of the parts. Students can then solve interesting and challenging addition and subtraction problems to find the measurements 	<ul style="list-style-type: none"> ● Recognize angles as additive. ● Solve addition and subtraction problems involving unknown angles. ● Write an equation for a word problem involving angle measurement and represent the unknown number with a symbol. 	

of unknown angles on a diagram in the real world and mathematical problems.	
DOK	Blooms
1-2	Understand, Apply and Analyze

Common Misconceptions

- | | |
|--|---|
| <ul style="list-style-type: none"> • Students may think the size of an angle's arms or rays affects its measure. • Students may think you can only use a protractor when there is a horizontal line. | <ul style="list-style-type: none"> • Students may think the direction of an angle matters. |
|--|---|

ASSESSMENT GUIDE

- [Solve problems involving measurement and conversion of measurements](#)
- [Represent and interpret data](#)
- [Geometric measurement: understand concepts of angle and measure angles](#)

Grade	CCSS Domain	CCSS Strand
4	Measurement and Data	Solve problems involving measurement and conversion of measurements
	Sample Task #1 (Constructed Response)	
	<p>Amy has a vegetable garden and a flower garden. Both gardens are in the shape of rectangles.</p> <ul style="list-style-type: none"> • The vegetable garden has a length of 10 feet and a width of 4 feet. • The flower garden has a length of 12 feet and an area of 60 square feet. <p>What is the total area, in square feet, of Amy's vegetable garden?</p>	
	Sample Task #2 (Multiple Choice)	
<p>Dylan gets home from school at 4:15 p.m. He spends 20 minutes on his homework and 15 minutes playing the drums. Then, he has free time. Dylan has to leave for soccer practice at 5:15 p.m. How many minutes of free time does he have before leaving for soccer practice?</p> <ul style="list-style-type: none"> A. 25 minutes B. 35 minutes C. 40 minutes D. 60 minutes 		

Grade	CCSS Domain	CCSS Strand
4	Measurement and Data	Represent and interpret data

Sample Task #1 (Constructed Response)

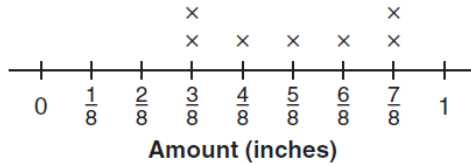
The chart to the right shows the distance fourth graders in Ms. Smith's class were able to run before stopping for a rest. Create a line plot to display the data in the table.

Student	Distance (in miles)
Joe	$2\frac{1}{2}$
Arianna	$1\frac{3}{4}$
Bobbi	$2\frac{1}{8}$
Morgan	$1\frac{5}{8}$
Jack	$2\frac{5}{8}$
Saisha	$2\frac{1}{4}$
Tyler	$2\frac{2}{4}$
Jenny	$\frac{5}{8}$
Anson	$2\frac{2}{8}$
Chandra	$2\frac{4}{8}$

Sample Task #2 (Multiple Choice)

2. This line plot shows the amount of rainfall each day last week.

Rainfall Last Week

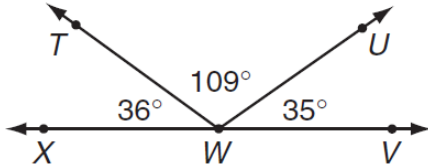


What was the total amount of rainfall last week?

- (A) $\frac{25}{8}$ inches
- (B) $\frac{28}{8}$ inches
- (C) $\frac{35}{8}$ inches
- (D) $\frac{36}{8}$ inches

Grade	CCSS Domain	CCSS Strand
4	Measurement and Data	Geometric measurement: understand concepts of angle and measure angles
	Sample Task #1 (Constructed Response)	
	Predict the measure of $\angle XYZ$ using your right-angle template. Then, find the actual measure of $\angle XYZ$ using a circular protractor and 180° protractor. Compare with your partner when you are finished.	
	Sample Task #2 (Multiple Choice)	

This diagram shows different angles.



What is the measure, in degrees, of $\angle TWV$?

- (A) 71
- (B) 74
- (C) 144
- (D) 145

MLSS AND CLR GUIDE

- [Solve problems involving measurement and conversion of measurements](#)
- [Represent and interpret data](#)
- [Geometric measurement: understand concepts of angle and measure angles](#)

CCSS Domain

CCSS Cluster

Measurement and Data

Solve problems involving measurement and conversion of measurements

Culturally and Linguistically Responsive Instruction

Relevance to Families and Communities

During a unit focused on solving problems involving measurement and conversion of measurements, 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 finding measurement of family garden, backyard or any space that is accessible from home so that there is relevance in finding measurement (finding the area or perimeter of the garden).

Cross-Curricular Connections

Science: In fourth grade the NGSS recommends students work with measurement related to erosion. Consider providing a connection for students to determine the area of vegetation in a certain place.

Language Arts: Literature can offer connections about area and perimeter such as: Spaghetti and Meatballs for All by Marilyn Burns.

<p>Validate/Affirm/Build/Bridge</p>	<ul style="list-style-type: none"> • <i>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?</i> • <i>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?</i> 	<ul style="list-style-type: none"> • Equity Based Practice (Posing Purposeful Questions): CLRI requires intentional planning around the questions posed in a mathematics classroom. It is critical to consider “who is being positioned as competent, and whose ideas are featured and privileged” within the classroom through both the types of questioning and who is being questioned. Mathematics classrooms traditionally ask short answer questions and reward students that can respond quickly and correctly. When questioning seeks to understand students’ thinking by taking their ideas seriously and asking the community to build upon one another’s ideas a greater sense of belonging in mathematics is created for students from marginalized cultures and languages. For example, when studying solving problems involving measurement and conversion of measurements, the pattern of questions within the classroom is critical because it is important to include every student in conversation to elicit their understanding and prior knowledge of content. Allowing students to collaborate will promote a culture of productive talk and allow students to express their thinking which is relevant to their life experiences. Students have the opportunity to take ownership of their learning and sense making of intended content. Through discussion, multiple strategies can evolve for students to utilize.
--	---	---

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"> • Connect to measuring lengths with halves and fourths of an inch. (3.MD.4) • Connect to estimating, measuring, adding, and subtracting lengths using inches, feet, yards, centimeters, and meters. (2.MD.1-6) • Connect to measuring and estimating masses of objects 	<ul style="list-style-type: none"> • Connect to interpreting a multiplication equation as a comparison. (4.OA.1) • Connect to multiplying to solve word problems involving multiplicative comparisons. (4.OA.2) 	<ul style="list-style-type: none"> • Connect to using unit conversions in solving multi-step, real world problems. (5.MD.1) • Connect to using ratio reasoning to convert measurement units; connect to manipulating and transforming units appropriately when multiplying or dividing quantities. (6.RP.3.d)

<p>using grams and kilograms and liquid volumes using milliliters and liters. (3.MD.2)</p> <ul style="list-style-type: none"> • Connect to measuring and estimating; and to adding, subtracting, multiplying, or dividing to solve one-step word problems given the same units. (3.MD.2) • Connect to telling and writing time to the nearest minute. Connect to adding and subtracting time intervals in minutes using number line diagrams. (3.MD.1) 		
---	--	--

Suggested Instructional Strategies

Pre-Teach

<i>Level of Intensity</i>	<i>Essential Question</i>	<i>Examples</i>
Targeted	<i>What pre-teaching will prepare students to productively struggle with the mathematics for this cluster within your HQIM?</i>	For example, some learners may benefit from targeted pre-teaching that rehearses prior learning when studying, solving problems involving measurement and conversion of measurements because students need to understand the basic foundations of content being covered in this standard. This includes measurement names, abbreviations, and prior work in word problems. Eliciting prior learning will help in understanding what students already know and what needs to be covered more thoroughly.
Intensive	<i>What critical understandings will prepare students to access the mathematics for this cluster?</i>	3.MD.A.2: This standard provides a foundation for work with solving problems involving measurement and conversion of measurements from a larger unit to a smaller unit because it is essential for students to understand and be able to solve problems involving measurement and estimation of intervals of time, liquid volumes, and masses of objects. 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		
<i>Level of Intensity</i>	<i>Essential Question</i>	<i>Examples</i>
Targeted	What formative assessment data (e.g., tasks, exit tickets, observations) will help identify content needing to be revisited during a unit?	For example, students may benefit from re-engaging with content during a unit on solving problems involving measurement and conversion of measurement from a larger unit to a smaller unit, by revisiting student thinking through a short mini-lesson because it is essential for students to be able to explain their thinking and reasoning behind it to portray understanding and learning of content. Revisiting student thinking will also allow the teacher to clear up misconceptions or student thinking that is not based on measurement.
Intensive	What assessment data will help identify content needing to be revisited for intensive interventions?	For example, some students may benefit from intensive extra time during and after a unit to solve problems involving measurement and conversion of measurement from a larger unit to a smaller unit by addressing conceptual understanding because first students need to understand what they are doing and the why so sense making of the intended content is developed with an understanding and building on their knowledge. Students will need explicit work with concrete materials to build conceptual understanding. For example, using centimeter blocks to see that 100 centimeters equals one meter.
Extension		
<i>Essential Question</i>		<i>Examples</i>
What type of extension will offer additional challenges to 'broaden' your student's knowledge of the mathematics developed within your HQIM?		For example, some learners may benefit from an extension such as the opportunity to explore links between various topics when studying and solve problems involving measurement and conversion of measurement from a larger unit to a smaller unit because this will allow students to make connections to prior learning and build on their understanding and knowledge of measurement and data.

CCSS Domain		CCSS Cluster	
Measurement and Data		Represent and interpret data	
Culturally and Linguistically Responsive Instruction			
Relevance to Families and Communities	<p>During a unit focused on representing and interpreting data, 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, students can gather data at home, discuss data tables with parents, or discuss other topics that can be used to gather information for data tables.</p>		
Cross-Curricular Connections	<p>Science: In fourth grade the NGSS recommends students “develop a model of waves to describe patterns in terms of amplitude and wavelength”. Consider providing a connection for students to determine the length of various waves that measure in fractional units. Then have students graph and analyze that data.</p> <p>Social Studies: In fourth grade the New Mexico Social Studies Standards state students should “understand how visual data (e.g., maps, graphs, diagrams, tables, charts) organizes and presents geographic information.” Consider having students gather, graph and analyze geographic data that contains measurements in fractions of a unit and can be displayed using a line plot. Consider providing opportunities to consider what type of data suits a line plot best.</p>		
Validate/Affirm/Build /Bridge	<ul style="list-style-type: none"> ● <i>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?</i> ● <i>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</i> <ul style="list-style-type: none"> ● Equity Based Practice (Building 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 representing and interpreting data the types of mathematical tasks are critical because this cluster deals with collection of data, creating line plots based on fractions, and interpreting data from a data table. These mathematical concepts need procedural and conceptual understanding. Students need to understand how to set up a number line that will represent their data, this includes fractional measurements. Students need understanding in 		

	<p><i>support students in creating mathematical identities as capable mathematicians that can use mathematics within school and society?</i></p>	<p>fractions and fraction measurements to be able to properly step up number lines in creating the line plot. Conceptual understanding comes through concrete work with these mathematical concepts.</p>
--	--	--

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"> Connect to generating measurement data and making line plots using whole number units. (2.MD.9) Connect to generating measurement data by measuring lengths using rulers marked with halves and fourths of an inch and showing the data by making a line plot where the horizontal scale is marked off in appropriate units- whole numbers, halves, or quarters. (3.MD.4) Connect to understanding line plots represent measurement data, not categorical data. (3.MD.3-4) 	<ul style="list-style-type: none"> Connect to using the four operations to solve word problems, including simple fractions and representing measurement quantities using diagrams. (4.MD.2) Connect to explaining why fractions are equivalent and generating equivalent fractions. (4.NF.1) Connect to adding and subtracting mixed numbers with like denominators. (4.NF.3c) 	<ul style="list-style-type: none"> Connect to making line plots with measurements to the half, quarter, and eighth of a unit and solving problems involving operations of fractions. (5.MD.2) Connect to solving real world problems involving the addition and subtraction of fractions referring to the same whole, including cases of unlike denominators. (5.NF.2)

Suggested Instructional Strategies

Pre-Teach

<i>Level of Intensity</i>	<i>Essential Question</i>	<i>Examples</i>
Targeted	<p><i>What pre-teaching will prepare students to productively struggle with the mathematics for this cluster within your HQIM?</i></p>	<p>For example, some learners may benefit from targeted pre-teaching that rehearses prior learning when studying, representing and interpreting data because students will have created line plots representing whole, halves, and fourths.</p>

Intensive	<i>What critical understandings will prepare students to access the mathematics for this cluster?</i>	3.MD.B.4: This standard provides a foundation for work with representing and interpreting data because students will have previous work with measuring to halves and fourths then creating line plots with this information. 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		
<i>Level of Intensity</i>	<i>Essential Question</i>	<i>Examples</i>
Targeted	What formative assessment data (e.g., tasks, exit tickets, observations) will help identify content needing to be revisited during a unit?	For example, students may benefit from re-engaging with content during a unit on representing and interpreting data by providing specific feedback to students on their work through a short mini-lesson because students will need feedback for mistakes they are making with creating or interpreting line plots. Attending precision with setting up line plots.
Intensive	What assessment data will help identify content needing to be revisited for intensive interventions?	For example, some students may benefit from intensive extra time during and after a unit representing and interpreting data by confronting student misconceptions because if students can set up line plots, it is important to look at the misconceptions that still have students. This will allow the teacher to isolate issues and work with the student in that area.
Extension		
<i>Essential Question</i>		<i>Examples</i>
What type of extension will offer additional challenges to 'broaden' your student's knowledge of the mathematics developed within your HQIM?		For example, some learners may benefit from an extension such as in-depth, self-directed exploration of self-selected topics when studying representing and interpreting data because students can explore where these types of data tables would be used or generate them from given information.

CCSS Domain		CCSS Cluster	
Measurement and Data		Geometric measurement: understand concepts of angle and measure angles	
Culturally and Linguistically Responsive Instruction			
Relevance to Families and Communities	<p>During a unit focused on geometric measurement: understand concepts of area and relate area to multiplication and to addition, 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 utilizing vocabulary cards with visuals to present the geometric shape to explain the concept of area. Students can then understand the area as how much two-dimensional space a shape takes up and then practice by using addition to counting individual square units or by multiplying the length and width of the shape. Students can use repeated addition to support their multiplication skills.</p>		
Cross-Curricular Connections	<p>Social Studies: In fourth grade the New Mexico Social Studies Standards state students should “explain how the Earth-Sun relationships produce day and night”. Consider providing a connection to the angle of Earth’s axis in relation to the Sun.</p> <p>Language Arts: Literature can offer connections about angles such as: What’s Your Angle, Pythagoras? by Julie Ellis or The Adventures of the Angles by Kristie Carpenter.</p>		
Validate/Affirm/Build/Bridge	<ul style="list-style-type: none"> • <i>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?</i> • <i>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</i> 	<ul style="list-style-type: none"> • 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 geometric measurement: understand concepts of angle and measure angles, goal setting is critical because it is recognizing important concepts that allows for the teacher to create a clear plan. Teachers are encouraged to think critically about students’ cultural background, strengths and weaknesses. Teacher is then looking at the students’ individual needs to plan accordingly so that students reach their end goal. 	

	<p><i>creating mathematical identities as capable mathematicians that can use mathematics within school and society?</i></p>	
--	--	--

Planning for Multi-Layered System of Supports

Vertical Alignment

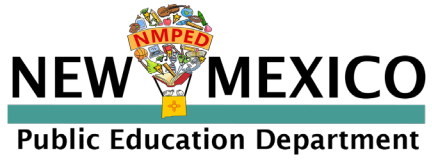
<i>Previous Learning</i>	<i>Current Learning</i>	<i>Future Learning</i>
<ul style="list-style-type: none"> Connect to understanding that shapes in different categories may share attributes. (3.G.1) Connect to recognizing and drawing shapes having specified attributes, such as a given number of angles. (2.G.1) Connect with using addition and subtraction within 100 to solve one-and two-step word problems. (2.OA.1) Connect to finding the unknown whole number using addition and subtraction. (1.OA.8) 	<ul style="list-style-type: none"> Connect to drawing and identifying lines and angles. (4.G.1) Connect to classifying two-dimensional figures based on lines and angles. (4.G.2) 	<ul style="list-style-type: none"> Connect to constructing triangles from three measures of angles. (7.G.2) Connect to using facts about supplementary, complementary, vertical, and adjacent angles in a multi-step problem to writing and solving simple equations for an unknown angle in a figure. (7.G.5)

Suggested Instructional Strategies

Pre-Teach

<i>Level of Intensity</i>	<i>Essential Question</i>	<i>Examples</i>
Targeted	<p><i>What pre-teaching will prepare students to productively struggle with the mathematics for this cluster within your HQIM?</i></p>	<p>For example, some learners may benefit from targeted pre-teaching that rehearses prior learning when studying geometric measurement: understand concepts of angle and measure angles because students will need to know how to draw and label line segments.</p>

Intensive	<i>What critical understandings will prepare students to access the mathematics for this cluster?</i>	4.G.A.1: This standard provides a foundation for work with drawing and identifying lines and angles and classifies shapes by properties of their lines and angles because students need to be able to draw and recognize angles. 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		
<i>Level of Intensity</i>	<i>Essential Question</i>	<i>Examples</i>
Targeted	What formative assessment data (e.g., tasks, exit tickets, observations) will help identify content needing to be revisited during a unit?	For example, students may benefit from re-engaging with content during a unit on geometric measurement: understand concepts of angle and measure angles by clarifying mathematical ideas and/or concepts through a short mini-lesson because students need to be able to recognize angles and recognize the degrees each angle represents.
Intensive	What assessment data will help identify content needing to be revisited for intensive interventions?	For example, some students may benefit from intensive extra time during and after a unit understanding concepts of angle and measure angles by addressing conceptual understanding because students who continue to struggle will need support with building conceptual understanding. This might include work with manipulatives or real-world examples.
Extension		
<i>Essential Question</i>		<i>Examples</i>
What type of extension will offer additional challenges to 'broaden' your student's knowledge of the mathematics developed within your HQIM?		For example, some learners may benefit from an extension such as the opportunity to explore links between various topics when studying, understand concepts of angle and measure angles because this cluster can be cross curricular and have ties to real world examples. Students can explore these links.



New Mexico Instructional Scope
4th Grade Measurement and Data Guide