New Mexico Instructional Scope

5th Grade Operations and Algebraic Thinking Guide

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

New Mexico Instructional Scope

5th Grade Operations and Algebraic Thinking 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

- Write and interpret numerical expressions
  - 5.OA.A.1
  - 5.OA.A.2
- Analyze patterns and relationships
  - 5.OA.B.3

New Mexico Instructional Scope

5th Grade Operations and Algebraic Thinking Guide

Grade	*CCSS Domain*	*CCSS Cluster*
5	**Operations and Algebraic Thinking**	**Write and interpret numerical expressions**

Cluster Standard: 5.OA.A.1

Standard	Standards for Mathematical Practice
Use parentheses, brackets, or braces in numerical expressions, and evaluate expressions with these symbols.	• **SMP 6:** Attend to precision.

Clarification Statement	Students Who Demonstrate Understanding Can...
• In fourth grade, students used comparison of multiplication and division problems; thinking about solutions in terms of reasonableness by using estimation in order to determine if the solutions were reasonable. Listening to others and gathering a variety of strategies to solve problems. Used appropriate mathematical vocabulary and accurate units of measure begin solving more sophisticated problems. • The order of operations is introduced in third grade and is continued in fourth. This standard calls for students to evaluate expressions with parentheses ( ), brackets [ ] and braces { }. In upper levels of mathematics, evaluate means to substitute for a variable and simplify the expression. However, at this level students are only to simplify the expressions because there are no variables. • In fifth grade, students work with exponents only dealing with powers of ten (5.NBT.2). Students are expected to evaluate an expression that has a power of ten in it.	• Understand the use of parentheses, expressions inside parentheses/brackets must be completed first when solving the equation. • Apply rules and solve problems for orders of operations (not to include exponents). • Solve problems and equations that employ parentheses, brackets, or braces.

DOK	Blooms
1	Remember, Understand, Apply

Grade	*CCSS Domain*	*CCSS Cluster*
5	**Operations and Algebraic Thinking**	**Write and interpret numerical expressions**

Cluster Standard: 5.OA.A.2

Standard	Standards for Mathematical Practice
Write simple expressions that record calculations with numbers and interpret numerical expressions without evaluating them. For example, express the calculation "add 8 and 7, then multiply by 2" as 2 × (8 + 7). Recognize that 3 × (18932 + 921) is three times as large as 18932 + 921, without having to calculate the indicated sum or product.	• **SMP 7:** Look for and make use of structure.

Clarification Statement	Students Who Demonstrate Understanding Can...
• In fourth grade, students used quantitative reasoning to solve single and multi-step problems that included all four operations using models, pictures, words, and numbers. Students continue to develop problem solving strategies by using various representations and models and selecting appropriate tools. They started writing equations to represent the mathematics of the situation. • This standard refers to expressions. Expressions are a series of numbers and symbols (+, -, x, ÷) without an equal's sign. Equations result when two expressions are set equal to each other (2 + 3 = 4 + 1). • This standard calls for students to verbally describe the relationship between expressions without calculating them. This standard calls for	• Write simple expressions that record calculations. • Interpret numerical expressions.

students to apply their reasoning of the four operations as well as place value while describing the relationship between numbers. The standard does not include the use of variables, only numbers and signs for operations.	
DOK	**Blooms**
1-2	Apply

Common Misconceptions

• Students may be confused about the order of operations, thinking that all multiplication is calculated before division and addition before subtraction instead of solving multiplication and/or division in order from left to right and continuing with addition and/or subtraction in order from left to right. • Students may misapply generalizations as they attempt to make sense of rules/patterns. A strategy that can be used is posing the question, "Is it always true?"	• Students may believe the order in which a problem with mixed operations is written is the exact order to solve the problem. The use of mnemonic phrase “Please Excuse My Dear Aunt Sally” to remember the order of operations (Parentheses, Exponents, Multiplication, Division, Addition, and Subtraction) can mislead students to always perform multiplication before division and addition before subtraction. • Students often do not use the correct terminology for the operations. Frequently students say “times” for multiplication. Students may not realize that math symbols are just short cuts for using words but that ALL symbols represent words in mathematics.

New Mexico Instructional Scope

5th Grade Operations and Algebraic Thinking Guide

Grade	*CCSS Domain*	*CCSS Cluster*
5	**Operations and Algebraic Thinking**	**Analyze patterns and relationships**

Cluster Standard: 5.OA.B.3

Standard	Standards for Mathematical Practice
Generate two numerical patterns using two given rules. Identify apparent relationships between corresponding terms. Form ordered pairs consisting of corresponding terms from the two patterns, and graph the ordered pairs on a coordinate plane. For example, given the rule "Add 3" and the starting number 0, and given the rule "Add 6" and the starting number 0, generate terms in the resulting sequences, and observe that the terms in one sequence are twice the corresponding terms in the other sequence. Explain informally why this is so.	• **SMP 3:** Construct viable arguments and critique the reasoning of others. • **SMP 7:** Look for and make use of structure.
Clarification Statement	**Students Who Demonstrate Understanding Can...**
• This standard is closely related to graphing points in the first quadrant of a coordinate plane (5.G.1-2) This standard extends the work from Fourth Grade, where students generate numerical patterns when they are given one rule. • In Fifth Grade, students are given two rules and generate two numerical patterns. The graphs that are created should be line graphs to represent the pattern. This is a linear function which is why we get the straight lines.	• Identify the relationship between two patterns. • Given a starting point, apply two math rules to that number. • Graph data on a coordinate plane (positive numbers only).
DOK	**Blooms**
1	Analyze, Understand

Common Misconceptions

• Students may reverse the points when plotting	

them on a coordinate plane. They count up first on the y-axis and then count over on the x-axis. T Begin with students providing a verbal description of how to plot each point. Then, have them follow the verbal description and plot each point.	

ASSESSMENT GUIDE

- Write and interpret numerical expressions
- Analyze patterns and relationships

Grade	*CCSS Domain*	*CCSS Strand*
5	**Operations and Algebraic Thinking**	**Write and interpret numerical expressions**
	Sample Task #1 (Constructed Response)	
	Each day Mia spends 20 minutes jogging and 35 minutes biking. How many minutes does Mia spend jogging and biking in 4 days? Show your work or explain how you know.	
	Sample Task #2 (Multiple Choice)	
	Jamal subtracted 9 from 21, then divided the difference by 3. Which expression represents his calculations? A. (21- 9) ÷ 3 B. 21 - (9÷3) C. (9 - 21) ÷ 3 D. 9 - (21 ÷ 3)	

Grade	*CCSS Domain*	*CCSS Strand*
5	**Operations and Algebraic Thinking**	**Analyze patterns and relationships**
	Sample Task #1 (Constructed Response)	

A chef is using two ovens that heat at different speeds, as shown in this table.

Top Oven	Bottom Oven
• starts at 60°F • gains 75°F every 2 minutes	• starts at 60°F • gains 100°F every 3 minutes

a. How long, in minutes, will it take for the top oven to get to 285°F? Show your work or explain how you know.

Sample Task #2 (Multiple Choice)

Cam and Mandy each created a rule for a different number pattern.

- Cam's rule: Multiply the input by 2, then add 1.
- Mandy's rule: Multiply the input by 3, then subtract 2.

Which table works for **both** Cam's rule and Mandy's rule?

Ⓐ

Input	Output
1	3

Ⓑ

Input	Output
2	5

Ⓒ

Input	Output
3	7

Ⓓ

Input	Output
4	10

MLSS AND CLR GUIDE

- Write and interpret numerical expressions
- Analyze patterns and relationships

CCSS Domain	*CCSS Cluster*
Operations and Algebraic Thinking	**Write and interpret numerical expressions**

Culturally and Linguistically Responsive Instruction

Relevance to Families and Communities	During a unit focused on writing and interpreting numerical expressions, 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 write or verbally state mathematical expressions that represent real-life situations such as, "My brother is 2. I am five times older than my brother. My sister is 4 years older than me. How old is my sister?" [(2x5)+4=14].	
Cross-Curricular Connections	Science: Students can create numerical expressions from data displayed in a table or graph	
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?*	• Using and Connecting Mathematical Representations: The standard for mathematical practice, use appropriate tools strategically, provides a strong foundation to validate and bridge for students. Mathematical representations are mathematical tools. The linguistic and cultural experiences of students provide different and varied types of representations for solving mathematical problems. By explicitly encouraging students to use multiple mathematical representations students can draw on their "mathematical, social, and cultural competence". By valuing these representations and discussing them we can connect student representations to the representations of school mathematics and build a bridge for students to position them as competent and capable mathematicians. For example, when studying writing and interpreting numerical expressions the use of mathematical representations within the classroom is critical because this cluster focuses on writing and evaluating mathematical expressions. Students are asked to solve multi-step problems using mathematical representations in the form of expressions that may include grouping symbols. In addition, students are expected to apply the rules of order of operations to evaluate, write, and interpret numerical expressions.

Planning for Multi-Layered System of Supports

Vertical Alignment

Previous Learning	*Current Learning*	*Future Learning*
• Connect to fluently adding and subtracting within 1,000. **(3.NBT.2)** • Connect to recalling from memory products of two 1-digit numbers. **(4.OA.1. B)**	• Connect to using knowledge of parentheses as a building block for order of operations.	• Connect to performing arithmetic operations following the order of operations with and without parentheses, including those involving whole number exponents. **(6.EE.2. D)** • Connect to applying the properties of operations to generate equivalent expressions with an emphasis on the distributive property. **(6.EE.3)** • Connect to writing, reading, and evaluating expressions in which letters stand for numbers. **(6.EE.A.2)** • Connect to applying the properties of operations to generate equivalent expressions. **(6.EE.A.3)** • Connect to identify when two expressions are equivalent (i.e., when the two expressions name the same number regardless of which value is substituted into them). For example, the expressions y + y + y and 3y are equivalent because they name the same number regardless of which number y stands for. **(6.EE.A.4)** • Connect to finding the greatest common factor of two whole numbers less than or equal to 100 and the least common multiple of two whole numbers less than or equal to 12. Use the distributive property to express a sum of two whole numbers 1–100 with a common factor as a multiple of a sum of two whole numbers with no common factor. For example, express 36 + 8 as 4 (9 + 2). **(6.NS.B.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?*	For example, some learners may benefit from targeted pre-teaching that introduces new representations (e.g., grouping symbols) when studying writing and interpreting numerical expressions because the concept of order of operations will be new to students.
Intensive	*What critical understandings will prepare students to access the mathematics for this cluster?*	4.OA.A.3: This standard provides a foundation for work with writing and interpreting numerical expressions because students have previous experience writing expressions. In addition, students worked informally with order of operations in grades 3 and 4 as they solved multi-step problems through modeling and writing equations. 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?	For example, students may benefit from re-engaging with content during a unit on writing and interpreting numerical expressions by revisiting student thinking through a short mini-lesson because student misconceptions in thinking may lead to errors in calculation. Encourage students to explain and clarify their reasoning in solving equations.
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 writing and interpreting numerical expressions by confronting student misconceptions because the order in which to calculate and knowing when to use parenthesis can be confusing to a number of students.

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?	For example, 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 writing and interpreting numerical expressions because some students will be able to write and solve more complicated equations. Offer opportunities to play games in which they must write equations to make a target number and explain their reasoning.

CCSS Domain	*CCSS Cluster*
Operations and Algebraic Thinking	**Analyze patterns and relationships**

Culturally and Linguistically Responsive Instruction

Relevance to Families and Communities	During a unit focused on analyzing patterns and relationships , 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, during community events, students and families can create charts and graphs that will show price/cost analysis when selling products during these events. Families could develop a sense of determining which type of snack or drink would sell more at different prices in order to determine how much to charge for their products.	
Cross-Curricular Connections	Science: Give students data represented in a table. Have students discuss the relationship between the numbers in the table.	
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*	• Supporting Productive Struggle in Learning Mathematics: The standard for mathematical practice, makes sense of mathematics and persevere in solving them is the foundation for supporting productive struggle in the mathematics classroom. "Too frequently, historically marginalized students are overrepresented in classes that focus on memorizing and practicing procedures and rarely

	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?*	provide opportunities for students to think and figure things out for themselves. When students in these classes struggle, the teacher often tells them what to do without building their capacity for persistence." Teachers need to provide tasks that challenge students and maintain that challenge while encouraging them to persist. This encouragement or "warm-demander" requires a strong relationship with students and an understanding of the culture of the students. For example, when studying analyzing patterns and relationships supporting productive struggle is critical because the process develops a sense of perseverance and creative problem solving. When students face problems they don't immediately know how to solve, we don't want them to give up because we want them to continue to work towards a possible solution that helps them understand the problem in their own way of thinking.

Planning for Multi-Layered System of Supports

Vertical Alignment

Previous Learning	***Current Learning***	***Future Learning***
• Connect to following one rule and then determine what happened in that pattern. **(4.OA.5)**	• Connect to graphing points on a coordinate plane. **(5.G.1, 5.G.2)**	• Connect to applying the use of variables to represent two quantities in real world problems. Students will write equations to represent the dependent and independent variables. **(6.EE.9)** • Connect to describing the relationship in ratio rates to solve real world problems. **(6.RP.2, 6.RP.3)**

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 rehearses prior learning when studying analyzing patterns and relationships because students will generate two numerical patterns using two given rules. Identify apparent relationships between corresponding terms. Form ordered pairs consisting of corresponding terms from the two patterns and graph the ordered pairs on a coordinate plane.
Intensive	*What critical understandings will prepare students to access the mathematics for this cluster?*	4.OA.C.5: This standard provides a foundation for work with analyzing patterns and relationships because the students will be able to generate terms in the resulting sequence and observe that the terms appear to alternate between odd and even numbers. Explain informally why the numbers will continue to alternate in this way. 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?	For example, students may benefit from re-engaging with content during a unit on analyzing patterns and relationships by clarifying mathematical ideas and/or concepts through a short mini-lesson because the students will be able to create, analyze and solve patterns and practice "PEMDAS" in order for them to create their pattern while getting the correct response. This enables the students to practice order of operations.
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 analyzing patterns and relationships by confronting student misconceptions because students will need to be able to walk through the PEMDAS process. The students will need to understand the process of multiplication and division and addition and subtraction do not necessarily need to be performed in that order. Students need to remember that the order goes from the operation on the left to the right. These misconceptions will give the students incorrect answers for their problems.

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?	For example, 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 analyzing patterns and relationships because students will be able to explore generating patterns and creating graphs and charts to exhibit their responses to the problems. It would also allow students to explore different topics and develop their own specifications for solving problems.

New Mexico Instructional S
5th Grade Fractions Gu

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Standards Breakdown

- Use equivalent fractions as a strategy to add and subtract fractions
  - 5.NF.A.1
  - 5.NF.A.2
- Apply and extend previous understandings of multiplication and division
  - 5.NF.B.3
  - 5.NF.B.4
  - 5.NF.B.5
  - 5.NF.B.6
  - 5.NF.B.7

Grade	CCSS Domain	CCSS Cluster
5	Fractions	Use equivalent fractions as a strategy to add subtract fractions

Cluster Standard: 5.NF.A.1

Standard	Standards for Mathematical Practice
Add and subtract fractions with unlike denominators (including mixed numbers) by replacing given fractions with equivalent fractions in such a way as to produce an equivalent sum or difference of fractions with like denominators. For example, 2/3 + 5/4 = 8/12 + 15/12 = 23/12. (In general, a/b + c/d = (ad + bc)/bd.)	• **SMP 4**: Model with mathematics.

Clarification Statement	Students Who Demonstrate Understanding Can...
• Builds on the work in fourth grade where students add fractions with like denominators. In fifth grade, the example provided in the standard 2⁄3 + 3⁄4 has students finding a common denominator by finding the product of both denominators. This process should come after students have used visual fraction models (area models, number lines, etc.) to build understanding of equivalent fractions before moving into the standard algorithm described in the standard. The use of these visual fraction models allows students to use reasonableness to find a common denominator prior to using the algorithm. Fifth grade students will need to express both fractions in terms of a new denominator with adding unlike denominators.	• Explain why fractions with unlike denominators need to be replaced with equivalent fractions with like denominators when adding or subtracting. • Generate equivalent fractions to find the like denominator. • Solve addition and subtraction problems involving fractions (including mixed numbers) with like and unlike denominators using an equivalent fraction strategy.

DOK	Blooms
1	Apply

Grade	CCSS Domain	CCSS Cluster
5	Fractions	Use equivalent fractions as a strategy to add subtract fractions

Cluster Standard: 5.NF.A.2

Standard	Standards for Mathematical Practice
Solve word problems involving addition and subtraction of fractions referring to the same whole, including cases of unlike denominators, e.g., by using visual fraction models or equations to represent the problem. Use benchmark fractions and number sense of fractions to estimate mentally and assess the reasonableness of answers. For example, recognize an incorrect result 2/5 + 1/2 = 3/7, by observing that 3/7 < 1/2. Use equivalent fractions as a strategy to add and subtract fractions.	• **SMP 1:** Make sense of problems and persevere in solving them. • **SMP 2:** Reason abstractly and quantitatively.
Clarification Statement	**Students Who Demonstrate Understanding Can...**
• This standard refers to number sense, which means students' understanding of fractions as numbers that lie between whole numbers on a number line. Number sense in fractions also includes moving between decimals and fractions to find equivalents, also being able to use reasoning such as 7/8 is greater than 3/4 because 7/8 is missing only 1/8 and 3/4 is missing 1/4 so 7/8 is closer to a whole. Also, students should use benchmark fractions to estimate and examine the reasonableness of their answers. Examples such as 5/8 are greater than 6/10 because 5/8 is 1/8 larger than 1/2 (4/8) and 6/10 is only 1/10 larger than 1/2 (5/10).	• Assess the reasonableness of answers, using mental estimation. • Add and subtract fractions, including those with unlike denominators. • Solve word problems using addition and subtraction of fractions, including those with unlike denominators.
DOK	**Blooms**
1	Apply

Common Misconceptions	
• Students often mix models when adding, subtracting or comparing fractions. Students will use a circle for thirds and a rectangle for fourths when comparing fractions with thirds and fourths. Remind students that the representations need to be from the same whole models with the same shape and same size.	

Grade	*CCSS Domain*	*CCSS Cluster*
5	Fractions	Apply and extend previous understandings multiplication and division

Cluster Standard: 5.NF.B.3

Standard	Standards for Mathematical Practice
Interpret a fraction as division of the numerator by the denominator (a/b = a ÷ b). Solve word problems involving division of whole numbers leading to answers in the form of fractions or mixed numbers, e.g., by using visual fraction models or equations to represent the problem. For example, interpret 3/4 as the result of dividing 3 by 4, noting that 3/4 multiplied by 4 equals 3, and that when 3 wholes are shared equally among 4 people each person has a share of size ¾.	• **SMP 2:** Reason abstractly and quantitatively.
Clarification Statement	**Students Who Demonstrate Understanding Can...**
• Fifth grade students should connect fractions with division, understanding that 5 ÷ 3 = 5⁄3 * Students should explain this by working with their understanding of division as equal sharing. Students should also create story contexts to represent problems involving division of whole numbers. This standard calls for students to extend their work of partitioning a number line from third and fourth grade. Students need ample experiences to explore the concept that a	• Interpret a fraction as division of the numerator by the denominator. • Interpret the remainder as a fractional part of the problem. • Solve word problems involving division of whole numbers leading to answers in the form of fractions or mixed numbers.

fraction is a way to represent the division of two quantities.	
DOK	**Blooms**
1-2	Apply

Grade	*CCSS Domain*	*CCSS Cluster*
5	**Fractions**	**Apply and extend previous understandings multiplication and division**

Cluster Standard: 5.NF.B.4

Standard	**Standards for Mathematical Practice**
Apply and extend previous understandings of multiplication to multiply a fraction or whole number by a fraction. ● 5.NF.B.4.a. Interpret the product (a/b) × q as a part of a partition of q into b equal parts; equivalently, as the result of a sequence of operations a × q ÷ b. For example, use a visual fraction model to show (2/3) × 4 = 8/3, and create a story context for this equation. Do the same with (2/3) × (4/5) = 8/15. (In general, (a/b) × (c/d) = ac/bd.) ● 5.NF.B.4.b. Find the area of a rectangle with fractional side lengths by tiling it with unit squares of the appropriate unit fraction side lengths, and show that the area is the same as would be found by multiplying the side lengths. Multiply fractional side lengths to find areas of rectangles and represent fraction products as rectangular areas.	● **SMP 8:** Look for and express regularity in repeated reasoning.
Clarification Statement	**Students Who Demonstrate Understanding Can...**
● Students need to develop a fundamental	● Extend previous understandings of multiplication

understanding that the multiplication of a fraction by a whole number could be represented as repeated addition of a unit fraction (e.g., 2 x (1⁄4) = 1⁄4 + 1⁄4). This standard extends student's work of multiplication from earlier grades. In fourth grade, students worked by recognizing that a fraction such as 3⁄5 could be represented as 3 pieces that are each one-fifth (3 x (1⁄5)). These standards reference both the multiplication of a fraction by a whole number and the multiplication of two fractions. Visual fraction models (area models, tape diagrams, number lines) should be used and created by students during their work with this standard. This standard extends students' work with area. In third grade students determine the area of rectangles and composite rectangles. In fourth grade students continue this work. The fifth-grade standard calls students to continue the process of covering (with tiles).	to multiply a fraction or a whole number by a fraction. • Explain that the product (a/b) x q is the same as a x q ÷ b. • Multiply a fraction or a whole number by a fraction. • Create a story context to multiply a fraction or a whole number by a fraction. • Explain that finding the area of a rectangle with fractional side lengths by filling with tiles is the same as would be found by multiplying the side lengths. • Find the area of a rectangle by tiling it with unit squares. • Multiply fractional side lengths to find the area of a rectangle.
DOK	**Blooms**
1-2	Apply

Grade	*CCSS Domain*	*CCSS Cluster*
5	Fractions	Apply and extend previous understandings multiplication and division

Cluster Standard: 5.NF.B.5

Standard	Standards for Mathematical Practice
Interpret multiplication as scaling (resizing), by: • 5.NF.B.5.a: Comparing the size of a product to the size of one factor on the basis of the size of the other factor, without performing the indicated multiplication. • 5.NF.B.5.b: Explaining why multiplying a given number by a fraction greater than 1 results in a	• **SMP 2:** Reason abstractly and quantitatively.

product greater than the given number (recognizing multiplication by whole numbers greater than 1 as a familiar case); explaining why multiplying a given number by a fraction less than 1 results in a product smaller than the given number; and relating the principle of fraction equivalence a/b = (n×a)/(n×b) to the effect of multiplying a/b by 1.	
Clarification Statement	**Students Who Demonstrate Understanding Can...**
• These standards ask students to examine how numbers change when we multiply by fractions. Students should have ample opportunities to examine both cases in the standard: a) when multiplying by a fraction greater than 1, the number increases and b) when multiplying by a fraction less than one, the number decreases. This standard should be explored and discussed while students are working with 5.NF.4, and should not be taught in isolation.	• Interpret multiplication by scaling, comparing the size of a product to the size of one factor based on the size of the other factor. • Explain why multiplying a given number by a fraction greater than one results in a product greater than the given number and why multiplying a given number by a fraction less than one results in a product smaller than the given number.
DOK	**Blooms**
1-3	Apply, Analyze

Grade	*CCSS Domain*	*CCSS Cluster*
5	Fractions	Apply and extend previous understandings multiplication and division

Cluster Standard: 5.NF.B.6

Standard	**Standards for Mathematical Practice**
Solve real world problems involving multiplication of fractions and mixed numbers, e.g., by using visual fraction models or equations to represent the problem.	• **SMP 2:** Reason abstractly and quantitatively.
Clarification Statement	**Students Who Demonstrate Understanding Can...**
• This standard builds on all of the work done in	• Represent word problems involving multiplication

this cluster. Students should be given ample opportunities to use various strategies to solve word problems involving the multiplication of a fraction by a mixed number. This standard could include fraction by a fraction, fraction by a mixed number or mixed number by a mixed number.	of fractions and mixed numbers. ● Solve real world problems involving multiplication of fractions and mixed numbers
DOK	**Blooms**
1-2	Apply

Grade	*CCSS Domain*	*CCSS Cluster*
5	**Fractions**	**Apply and extend previous understandings multiplication and division**

Cluster Standard: 5.NF.B.7

Standard	**Standards for Mathematical Practice**
Apply and extend previous understandings of division to divide unit fractions by whole numbers and whole numbers by unit fractions. ● 5.NF.B.7.a: Interpret division of a unit fraction by a non-zero whole number and compute such quotients. For example, create a story context for (1/3) ÷ 4, and use a visual fraction model to show the quotient. Use the relationship between multiplication and division to explain that (1/3) ÷ 4 = 1/12 because (1/12) × 4 = 1/3. ● 5.NF.B.7.b: Interpret division of a whole number by a unit fraction and compute such quotients. For example, create a story context for 4 ÷ (1/5), and use a visual fraction model to show the quotient. Use the relationship between	● **SMP 1:** Make sense of problems and persevere in solving them. ● **SMP 3:** Construct viable arguments and critique the reasoning of others.

multiplication and division to explain that 4 ÷ (1/5) = 20 because 20 × (1/5) = 4. ● 5.NF.B.7.c: Solve real world problems involving division of unit fractions by non-zero whole numbers and division of whole numbers by unit fractions, e.g., by using visual fraction models and equations to represent the problem. For example, how much chocolate will each person get if 3 people share 1/2 lb of chocolate equally? How many 1/3-cup servings are in 2 cups of raisins?	
Clarification Statement	**Students Who Demonstrate Understanding Can...**
● This is the first time that students are dividing fractions. In fourth grade students divided whole numbers, and multiplied a whole number by a fraction. The concept unit fraction is a fraction that has a one in the denominator. For example, the fraction 3⁄5 is 3 copies of the unit fraction 1⁄5. 1⁄5 + 1⁄5 + 1⁄5 = 3⁄5 = 1⁄5 x 3 or 3 x 1⁄5. This standard asks students to work with story contexts where a unit fraction is divided by a non-zero whole number. Students should use various fraction models and reasoning about fractions.	● Know the relationship between multiplication and division. ● Interpret division of a unit fraction by a whole number and justify your answer using the relationship between multiplication and division, by creating story problems, using visual models, and relationship to multiplication. ● Interpret division of a whole number by a unit fraction and justify your answer using the relationship between multiplication and division, and by representing the quotient with a visual fraction model. ● Solve real world problems involving division of unit fractions by whole numbers other than 0 and division of whole numbers by unit fractions using strategies such as visual fraction models and equations.
DOK	**Blooms**
1-2	Apply

Common Misconceptions

● Students may initially think that you can not divide a "smaller number" by a "bigger number" since this will be a new situation for them to consider.	● Students may believe that multiplication always results in a larger number.

ASSESSMENT GUIDE

- Use equivalent fractions as a strategy to add and subtract fractions
- Apply and extend previous understandings of multiplication and division

Grade	*CCSS Domain*	*CCSS Strand*
5	Fractions	Use equivalent fractions as a strategy to ad subtract fractions
	Sample Task #1 (Constructed Response)	
	Robin is 11 years old. Her mother, Gwen, is 2 years more than 3 times Robin's age. How old is Gwen?	
	Sample Task #2 (Multiple Choice)	
	Which expression represents the statement shown? Add 3 and 5, next add 8 and 2, then multiply the two sums. A. (3+5) + (8+2) x 2 B. 3+5+8+2x2 C. (3x5) + (8x2) D. (3+5) x (8+2)	

Grade	*CCSS Domain*	*CCSS Strand*
5	Fractions	Apply and extend previous understanding multiplication and division
	Sample Task #1 (Constructed Response)	
	Michelle has 3 kg of strawberries that she divided equally into small bags with 1/5 kg in each bag. How many bags of strawberries did she make? She gave a bag to her friend, Sarah. Sarah ate half of her strawberries. How many grams of strawberries does Sarah have left?	
	Sample Task #2 (Multiple Choice)	

Jack uses the values from two patterns to form ordered pairs.
• Both patterns start at 2.
• The rule for the x-values is to add 1
to the previous term.
• The rule for the y-values is to add 3
to the previous term.
Jack then graphs the ordered pairs. Which ordered pair is on the line that Jack graphs?

A. (3,5)
B. (4,5)
C. (4,6)
D. (5,3)

MLSS AND CLR GUIDE

- Use equivalent fractions as a strategy to add and subtract fractions
- Apply and extend previous understandings of multiplication and division

CCSS Domain	*CCSS Cluster*
Fractions	Use equivalent fractions as a strategy to add and subtract frac

Culturally and Linguistically Responsive Instruction

Relevance to Families and Communities	During a unit focused on the use of creating equivalent fractions as a strategy to add and subtract fractions, 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, connect fraction addition and subtraction to cooking within the home. Students may also be familiar with carpentry and may be able to connect this mathematical concept to this task seen within the home and/or community. By allowing students to interact with fractions on a personal level, students see the relevance to their everyday lives and can connect with the mathematical concepts.	
Cross-Curricular Connections	STEM: Students add fractions from given or collected data to find the total.	
Validate/Affirm/Build/ Bridge	• *How can you design your mathematics classroom to intentionally and purposefully legitimize the home culture and*	• 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

	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?*	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 the use of creating equivalent fractions as a strategy to add and subtract fractions the types of mathematical tasks are critical because students must connect their mathematical models to the development of procedures used to add and subtract fractions with unlike denominators, in order to fully understand the concepts that make up the procedure. Students can create models that represent items they see and interact with daily. From those models, students can connect the procedural routine of creating equivalent fractions as a strategy to add and subtract fractions. By using objects that students are familiar with, the teacher can build fluency with a connection to procedural understanding. Students who understand the reason behind the procedure are more likely to build fluency and precision when using the procedure involved in creating equivalent fractions as a strategy to add and subtract fractions.

Planning for Multilayered System of Supports

Vertical Alignment

Previous Learning	***Current Learning***	***Future Learning***
• Connect to comparing fractions with different denominators by creating common denominators. **(4.NF.1,2)** • Connect to adding and subtracting fractions with like denominators. **(4.NF.3)** • Connect to making a line plot to display a data set of measurements in fractions of a unit. **(4. MD.4)**	• Connect to making a line plot to display a data set and will add and subtract fractions of a unit to solve problems involving the information presented in the line plot. **(5.MD.2)**	• Connect to solving algebraic equations and real-world problems using rational numbers. **(6.EE.7)**

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 rehearses prior learning when studying the use of equivalent fractions as a strategy to add and subtract fractions because "to add or subtract fractions with unlike denominators, students use their understanding of equivalent fractions to create fractions with the same denominators. Start with problems that require the changing of one of the fractions and progress to changing both fractions. Allow students to add and subtract fractions using different strategies such as number lines, area models, fraction bars or strips. Have students share their strategies and discuss commonalities in them."
Intensive	*What critical understandings will prepare students to access the mathematics for this cluster?*	4.NF.A.1 Explain why a fraction a/b is equivalent to a fraction (n × a)/(n × b) by using visual fraction models, with attention to how the number and size of the parts differ even though the two fractions themselves are the same size: This standard provides a foundation for work with the use of equivalent fractions as a strategy to add and subtract fractions because students need to understand what an equivalent fraction is, in order to understand why it is important to first create equivalent fractions when adding and subtracting fractions. 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 need for common denominators when adding and subtracting fractions and mixed numbers.	• Add and subtract fractions with unlike denominators.
	• Solve word problems using addition and subtraction of fractions, including
		• Build on students' experience with the following skills:
		  ○ Explain why a fraction is equivalent to another fraction by using visual models (4.NF.1)
		  ○ Recognize that comparisons are valid only when the two fractions refer to the

• Fractions and mixed numbers with unlike denominators can be replaced with equivalent fractions and mixed numbers with like denominators when adding or subtracting.	those with unlike denominators. • Analyze results using models and benchmark fractions to determine whether an answer is reasonable.	same whole. (4.NF.2) ○ Understand addition and subtraction of fractions as joining and separating parts referring to the same whole. (4.NF.3) ○ Convert mixed fractions to standard fractions • 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: ○ Number line ○ Area Model ○ Pattern Blocks ○ Fraction Bars ○ Tangrams

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?	For example, students may benefit from re-engaging with content during a unit on the use of equivalent fractions as a strategy to add and subtract fractions by revisiting student thinking through a short mini-lesson because "students need to develop the understanding that when adding or subtracting fractions, the fractions must refer to the same whole. Any models used must refer to the same whole. Students may find that a circular model might not be the best model when adding or subtracting fractions."
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 on the use of equivalent fractions as a strategy to add and subtract fractions by addressing conceptual understanding

		because students need to understand what the procedure is doing in order to develop fluency and proficiency with the procedure for using equivalent fractions as a strategy for adding and subtracting fractions. Some students may need practice representing fractions visually or physically before understanding the idea of equivalent fractions and why they are needed when adding and subtracting fractions.

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?	For example, some learners may benefit from an extension such as the application of and development of abstract thinking skills when studying the use of equivalent fractions as a strategy to add and subtract fractions because some students may understand the concepts quickly and easily. These students will not benefit from the continued creation of models, if they already understand the reasoning behind the procedure. Allow these students to communicate their thinking through images, concepts, facts, language and procedures (ICFLP Dr. Lorenzo Gonzales). Expose these students to more complex problems involving mixed numbers, fractions with denominators that are not compatible, and problems that require changing both fractions. Allow these students to explore and create procedures for creating equivalent fractions as a strategy to add and subtract fractions. Encourage these students to explain their thinking, test hypothesis, and modify procedures as necessary. Valid their thinking and address any misconceptions that arise quickly.

CCSS Domain	*CCSS Cluster*
Fractions	Apply and extend previous understandings of multiplication and d

Culturally and Linguistically Responsive Instruction

Relevance to Families and Communities	During a unit focused on apply and extend previous understandings of multiplication and division to multiply and divide fractions, 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, students can create story contexts for multiplying and dividing fractions and include a visual model. For example, How much pie? After a family function, Emily has 3 equally sized pies and wants to divide them equally into eight equal portions to give to family members that want to take some home. How much pie does each family member receive?	
Cross-Curricular Connections	Social Studies: Connect fractions to studies of geography including scaling graphs and cross-sections, changes in measure (population, GDP) Health: connect fractions to food sharing, cooking, serving portions, nutrition, medical doses, heart beats per minute, steps per day. Present students with real-world problems using these topics.	
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?*	• Tasks: The type of mathematical tasks and instruction students receive provides the foundation for students' mathematical learning and their mathematical identity. Tasks and instructions 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 lead 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 Apply and extending previous understanding of multiplication and division to multiply and divide fractions the types of 47 8 mathematical tasks are critical because students are demonstrating their conceptual understanding, procedural fluency, and problem solving and reasoning. Students use a variety of problem-solving situations to develop an understanding of multiplication and division of fractions.

Planning for Multi-Layered System of Supports

Vertical Alignment

Previous Learning	*Current Learning*	*Future Learning*
• Connect to understanding concepts of area and relate area to multiplication and to addition. **(3.MD.7)** • Connect to using the four operations with whole numbers to solve problems. **(4.OA.1,2,3)** • Connect to understanding the concept of equivalent fractions by using visual fraction models. **(4.NF.1)** • Connect to multiplying a fraction by a whole number. **(4.NF.4)**	• Connect to understanding of tenths and hundredths to perform operations with multi-digit whole numbers and with decimals to hundredths. **(5.NBT.5,6,7)** • Connect to knowledge of writing simple expressions to solve real problems with fractions. They will also interpret expressions without actually evaluating them. **(5.OA.2)** • Connect to using operations on fractions of a unit (1/2, 1/4, 1/8) to solve problems involving information presented in line plots. **(5.MD.2)**	• Connect to using ratios written as fractions and divide into decimal form 3 ÷ 4 = 3⁄4 = 0.75. **(6.RP .1,3)** • Connect to solving multiplication equations that include non-negative rational numbers. **(6.EE.7)** • Connect to multiplying and divide fractions by fractions. **(6.NS.1)**

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 rehearses prior learning when studying apply and extend previous understandings of multiplication and division to multiply and divide fractions because use of models to multiply a fraction by a whole number will help student connect to the meaning of whole number multiplication.
Intensive	*What critical understandings will prepare students to access the mathematics for this cluster?*	3.OA.A.1. This standard provides a foundation for work with multiplying and dividing fractions because this standard has students represent and solve problems involving multiplication and division, conceptual models of understanding multiplication and division. 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***

• A fraction can be interpreted as division of the numerator by the denominator.
• What is happening when they multiply a fraction by a fraction.
• Why multiplying a given number by a fraction greater than one results in a product greater than the given number and why multiplying a given number by a fraction less than one results in a product smaller than the given number.
• Connections between division with fractions and multiplication with fractions using previous understanding of the relationship between multiplication and division.
	• Solve division problems involving whole numbers that lead to answers in the form of a fraction by using a visual fraction model or equations.
	• Multiply a fraction or a whole number by a fraction.
	• Solve problems involving the multiplication of fractions and mixed numbers using visual fraction models or equations.
	• Solve division problems that include unit fractions divided by whole numbers (non-zero) and whole numbers (non-zero) divided by unit fractions.
		• Build on students' experience with the following skills:
		  ○ Using visual fractional models (4.NF.4a)
		  ○ Converting measurement units from a larger unit to a smaller unit
		  ○ Finding area by tiling dealing with whole numbers to find fractional area of a shape
		
		• 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:
		  ○ Area Models
		  ○ Tape Diagrams
		  ○ Drawing Models
		  ○ Number Lines
		  ○ Contextual Problems

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?	For example, students may benefit from re-engaging with content during a unit on connecting multiplication and division of whole numbers to multiplication and division of fractions by giving students connected situations they can model by clarifying mathematical ideas and/or concepts through a short mini-lesson because exploration using various representations including concrete and pictorial models.
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 Apply and extend previous understanding of multiplication and division to multiply and divide fractions by confronting student misconceptions because students may initially think that they cannot divide a "smaller number by a bigger number" since this will be a new situation for them to consider. It is important they understand this concept in a way that makes sense to them rather than be shown how to do it.

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?	For example, 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 Apply and extend previous understanding of multiplication and division to multiply and divide fractions because as students work with various models of multiplication and division of whole numbers, fractions, and mixed numbers, visual representations will help them understand the size of the product/quotient when they multiply/divide a fraction by a whole number, a whole number by a fraction, or a fraction by a fraction.

New Mexico Instructional Scope

5th Grade Geometry Guide

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

New Mexico Instructional Scope

5th Grade Geometry 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

- Graph points on the coordinate plane to solve real-world and mathematical problems
  - 5.G.A.1
  - 5.G.A.2
- Classify two-dimensional figures into categories based on their properties
  - 5.G.B.3
  - 5.G.B.4

Grade	*CCSS Domain*	*CCSS Cluster*
5	**Geometry**	**Graph points on the coordinate plane to solve real-world and mathematical problems**

Cluster Standard: 5.G.A.1

Standard	Standards for Mathematical Practice
Graph points on the coordinate plane to solve real world mathematical problems. Use a pair of perpendicular number lines, called axes, to define a coordinate system, with the intersection of the lines (the origin) arranged to coincide with the 0 on each line and a given point in the plane located by using an ordered pair of numbers, called its coordinates. Understand that the first number indicates how far to travel from the origin in the direction of one axis, and the second number indicates how far to travel in the direction of the second axis, with the convention that the names of the two axes and the coordinates correspond (e.g., x-axis and x-coordinate, y axis and y-coordinate).	• **SMP 6:** Attend to precision.
Clarification Statement	**Students Who Demonstrate Understanding Can...**
• These standards deal with only the first quadrant (positive numbers) in the coordinate plane. Although students can often "locate a point," these understandings are beyond simple skills. For example, initially, students often fail to distinguish between two different ways of viewing the point (2, 3), say, as instructions: "right 2, up 3"; and as the point defined by being a distance 2 from the y-axis and a distance 3 from the x-axis. In these two descriptions the 2 is first associated with the x-axis, then with the y-axis.	• Graph points in the first quadrant. • Interpret coordinate values of points in real world context and mathematical problems. • Represent real world and mathematical problems by graphing points in the first quadrant.
DOK	**Blooms**
1-2	Apply, Understand

Grade	*CCSS Domain*	*CCSS Cluster*
5	**Geometry**	**Graph points on the coordinate plane to solve real-world and mathematical problems**

Cluster Standard: 5.G.A.2

Standard	Standards for Mathematical Practice
Graph points on the coordinate plane to solve real world mathematical problems. Represent real world and mathematical problems by graphing points in the first quadrant of the coordinate plane and interpret coordinate values of points in the context of the situation.	• **SMP 1:** Make sense of problems and persevere in solving them. • **SMP 2:** Reason abstractly and quantitatively.
Clarification Statement	**Students Who Demonstrate Understanding Can...**
• This standard references real-world and mathematical problems, including the traveling from one point to another and identifying the coordinates of missing points in geometric figures, such as squares, rectangles, and parallelograms.	• Graph points in the first quadrant. • Interpret coordinate values of points in real world context and mathematical problems. • Represent real world and mathematical problems by graphing points in the first quadrant.
DOK	**Blooms**
1	Apply

Common Misconceptions

• Students may think the order in plotting a coordinate point is not important.	

Grade	*CCSS Domain*	*CCSS Cluster*
5	**Geometry**	**Classify two-dimensional figures into categories based on their properties**

Cluster Standard: 5.G.B.3

Standard	Standards for Mathematical Practice
Classify two-dimensional figures into categories based on their properties. Understand that attributes belonging to a category of two-dimensional figures also belong to all subcategories of that category. For example, all rectangles have four right angles and squares are rectangles, so all squares have four right angles.	• **SMP 6:** Attend to precision. • **SMP 8:** Look for and express regularity in repeated reasoning.
Clarification Statement	**Students Who Demonstrate Understanding Can...**
• This standard calls for students to reason about the attributes (properties) of shapes. Students should have experiences discussing the property of shapes and reasoning. The notion of congruence (“same size and same shape”) may be part of classroom conversation but the concepts of congruence and similarity do not appear until middle school.	• Recognize that some two-dimensional shapes can be classified into more than one category based on their attributes. • Recognize if a two-dimensional shape is classified into a category, that it belongs to all subcategories of that category.
DOK	**Blooms**
1-3	Understand

Grade	*CCSS Domain*	*CCSS Cluster*
5	**Geometry**	**Classify two-dimensional figures into categories based on their properties**

Cluster Standard: 5.G.B.4

Standard	Standards for Mathematical Practice
Classify two-dimensional figures into categories based on their properties. Classify two dimensional figures in a hierarchy based on properties.	• **SMP 2:** Reason abstractly and quantitatively. • **SMP 3:** Construct viable arguments and critique the reasoning of others. • **SMP 7:** Look for and make use of structure.
Clarification Statement	**Students Who Demonstrate Understanding Can...**
• This standard builds on what was done in 4th grade. Figures from previous grades: polygon, rhombus/rhombi, rectangle, square, triangle, quadrilateral, pentagon, hexagon, cube, trapezoid, half/quarter circle, circle, kite. A kite is a quadrilateral whose four sides can be grouped into two pairs of equal-length sides that are beside (adjacent to) each other. Students should be able to reason about the attributes of shapes by examining: What are ways to classify triangles? Why can't trapezoids and kites be classified as parallelograms? Which quadrilaterals have opposite angles congruent and why is this true of certain quadrilaterals, and How many lines of symmetry does a regular polygon have? • Note, in the U.S., the term "trapezoid" may have two different meanings. Research identifies these as inclusive and exclusive definitions. The inclusive definition states: A trapezoid is a quadrilateral with at least one pair of parallel sides. The exclusive definition states: A trapezoid is a quadrilateral with exactly one pair of parallel sides. With this definition, a parallelogram is not a trapezoid. North Carolina has adopted the exclusive definition. (Progressions for the CCSSM: Geometry, The Common Core Standards Writing	• Recognize the hierarchy of two-dimensional shapes based on their attributes. • Analyze properties of two-dimensional figures in order to place them into a hierarchy. • Classify two-dimensional figures into categories and/or subcategories based on their attributes.

Team, June 2012.)	
DOK	**Blooms**
1-2	Understand

Common Misconceptions

• Students may think that when describing geometric shapes and placing them in subcategories, the last category is the only classification that can be used.	

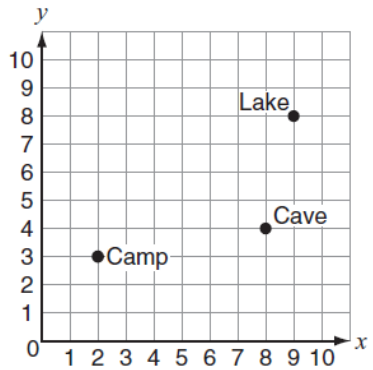
ASSESSMENT GUIDE

- Graph points on the coordinate plane to solve real-world and mathematical problems
- Classify two-dimensional figures into categories based on their properties

Grade	*CCSS Domain*	*CCSS Strand*
5	**Geometry**	**Graph points on the coordinate plane to solve real-world and mathematical problems**

Sample Task #1 (Constructed Response)

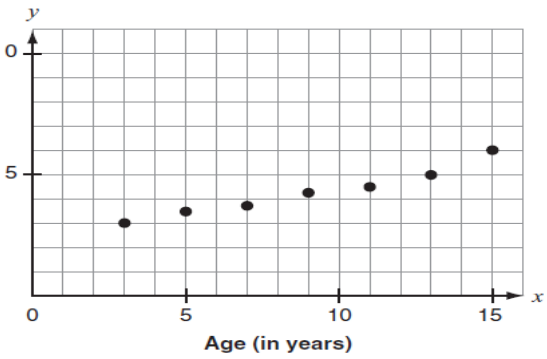
Terry plotted the locations of places in a state park.



a. What is the ordered pair that gives the location of the camp?

Sample Task #2 (Multiple Choice)

1. Gabriel made this coordinate grid to show his height at different ages.



The *x*-axis represents his age in years, and the *y*-axis represents his height in feet.

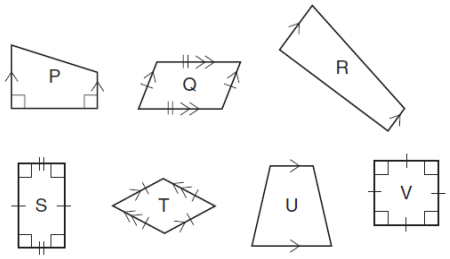
Based on the coordinate grid, how much did Gabriel grow from age 3 to age 13?

Ⓐ 2 feet
Ⓑ 3 feet
Ⓒ 4 feet
Ⓓ 5 feet

Grade	*CCSS Domain*	*CCSS Strand*
5	**Geometry**	**Classify two-dimensional figures into categories based on their properties**

Sample Task #1 (Constructed Response)

A teacher drew these shapes on the board.



a. Which shapes are parallelograms? List **all** that apply.

Sample Task #2 (Multiple Choice)

Three figures are shown.

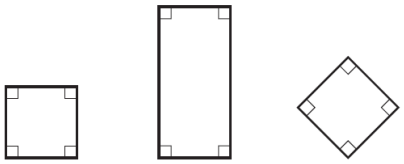


Figure 1 Figure 2 Figure 3

Which figures are rectangles?

Ⓐ figure 2 only
Ⓑ figures 1 and 2 only
Ⓒ figures 1 and 3 only
Ⓓ figures 1, 2, and 3

MLSS AND CLR GUIDE

- Graph points on the coordinate plane to solve real-world and mathematical problems
- Classify two-dimensional figures into categories based on their properties

CCSS Domain	*CCSS Cluster*
Geometry	**Graph points on the coordinate plane to solve real-world and mathematical problems**

Culturally and Linguistically Responsive Instruction

Relevance to Families and Communities	During a unit focused on graphing points on the coordinate plane to solve real-world and mathematical problems, 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, families and communities can create different charts and graphs to analyze various types of fundraiser sales to determine which items would be more efficient in selling during community events.	
Cross-Curricular Connections	STEM: Plot on a coordinate system. For example: Plot stars, planets, moons, asteroids, and other celestial bodies on a diorama of the solar system. Plot stars of a constellation on a coordinate system. Identify the location of stars on a system map using ordered pairs.	
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*	• When planning with your HQIM, consider how to modify tasks to represent the prior experiences, culture, language and interests of your students to "portray mathematics as useful and important in students' lives and promote students' lived experiences as important in mathematics class." Tasks can also be designed to "promote social justice [to] engage students in using mathematics to understand and eradicate social inequities (Gutstein 2006)." For example, when studying graphing points on the coordinate plane to solve real-world and mathematical problems the types of mathematical tasks are critical because when students are given problems that they can relate to their everyday lives, they tend to develop a strong understanding of the concept or skill that is being taught. By allowing the

	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?	students to have a part in developing the problem, it gives them ownership of the problem and it allows them to perform successfully on the task. The teacher should only provide the framework and allow the students to fill in the remaining information that is needed to complete the problem. This allows the students to use their personal and real-life situations to create more meaningful tasks that will allow for more success.

Planning for Multi-Layered System of Supports

Vertical Alignment

Previous Learning	***Current Learning***	***Future Learning***
• Connect to plotting points on a number line and construct perpendicular lines. **(4.G.1, 4. MD.4)**	• Connect to forming ordered pairs from given rules and graph points on a coordinate plane. **(5.OA.3)**	• Connect to extending understanding of a coordinate plane to the negative number coordinates. **(6.NS.6)**

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 rehearses prior learning when studying graphing points on the coordinate plane to solve real-world and mathematical problems because students must be able to understand domain specific vocabulary and should be able to access prior knowledge learned in previous grade levels.
Intensive	*What critical understandings will prepare students to access the mathematics for this cluster?*	3.MD.B.4: This standard provides a foundation for work with graphing points on the coordinate plane to solve real-world and mathematical problems because students should be able to show data by making a line plot, where the horizontal scale is marked off in appropriate units. Without knowledge of the vocabulary and prior knowledge, the students will continue to struggle. 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?	For example, students may benefit from re-engaging with content during a unit on graphing points on the coordinate plane to solve real-world and mathematical problems by clarifying mathematical ideas and/or concepts through a short mini-lesson because confusion by students of key domain specific vocabulary which can cause students to reverse the data being presented. Reteaching key domain specific vocabulary and any prior knowledge will present comprehension of the standard being taught.
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 graphing points on the coordinate plane to solve real-world and mathematical problems by confronting student misconceptions because students will be able to identify the difference between horizontal and vertical and its association with the variables x and y on a coordinate grid. Students will be able to distinguish between Horizontal (lying flat) vs Vertical (standing tall) which are commonly reversed.

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?	For example, some learners may benefit from an extension such as the application of and development of abstract thinking skills when studying graphing points on the coordinate plane to solve real-world and mathematical problems because students will be able to develop an understanding of why coordinate grids are listed as x-axis, y-axis) and explain in full detail what would happen if mixed around.

CCSS Domain	*CCSS Cluster*
Geometry	**Classify two-dimensional figures into categories based on their properties**

Culturally and Linguistically Responsive Instruction

Relevance to Families and Communities	During a unit focused on classifying two-dimensional figures into categories based on their properties, 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, have your student identify different shapes in the home and community environment Ask your student to describe the shape based on the number of sides and angles and ask if they can tell you what categories(s) that shape fits into.	
Cross-Curricular Connections	Art: Provide students with multiple colors and textures of paper. Have them work in groups to create collages based on the attributes of different shapes. Give students strips of paper that give examples of different shapes. Allow them to create their collages based on the attributes given. History and Architecture: Have students study the shapes of historical dwellings/buildings. Have students make connections to the building in their communities. Discuss why certain shapes may have been more fitting than others for various buildings. Have students describe the dwellings/buildings based on their attributes.	
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?	classifying two dimensional figures into categories based on their properties, facilitating meaningful mathematical discourse is critical because this cluster requires students to reason about the attributes of shapes. Students need ample opportunity to discuss with peers the properties and attributes of shapes to develop understanding. Lead discussions asking students to not only talk about the properties of polygons, but also to reason about the attributes of each shape and how each shape should be classified. Students should also be able to explain why some shapes fit into subcategories.

Planning for Multi-Layered System of Supports

Vertical Alignment

Previous Learning	*Current Learning*	*Future Learning*
• Connect to learning that shapes in different categories share attributes. **(2.G.1)** • Connect to learning that shared attributes can define a larger category. For example, rectangles, squares, and rhombuses are all examples of quadrilaterals. **(3.G.1)** • Connect to classifying two-dimensional figures based on lines and angles. **(4.G.2)**	•	• Connect to drawing shapes with given conditions. **(7.G.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?*	For example, some learners may benefit from targeted pre-teaching by rehearsing new mathematical language when studying Classifying Two-Dimensional Figures Into Categories Based On Their Properties because this cluster is rich in mathematical vocabulary that may be confusing for some students.

Intensive	*What critical understandings will prepare students to access the mathematics for this cluster?*	2.G.A.1: This standard provides a foundation for work with <mathematics of the assigned cluster> because its roots begin in 2nd grade where students recognize and draw shapes having specified attributes, such as a given number of angles or a given number of equal faces. 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?	For example, students may benefit from re-engaging with content during a unit on Classifying Two-Dimensional Figures Into Categories Based On Their Properties by clarifying mathematical ideas and/or concepts through a short mini-lesson because students may have a difficult time understanding that figures can belong to more than one category, based on their attributes. For example, squares also belong to the following categories: quadrilaterals, rectangles, and parallelograms.
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 Classifying Two-Dimensional Figures Into Categories Based On Their Properties by helping students move from specific answers to generalizations because the more ways students can classify and reason about shapes, the better they will understand their properties. Lead students into answering questions like, “Why is a square always a triangle?” and “Why is a rectangle not always a square?”.

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?	For example, 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 Classifying Two-

	Dimensional Figures Into Categories Based On Their Properties because students can extend thinking using graphic organizers, such as flow charts or T-charts, to compare and contrast the attributes of geometric figures. (Students need not be limited to quadrilaterals).

New Mexico Instructional Scope

5th Grade Measurement and Data Guide

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

New Mexico Instructional Scope

5th Grade Measurement and Data 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

- Convert like measurement units within a given measurement system
  - 5.MD.A.1
- Represent and interpret data
  - 5.MD.B.2
- Geometric measurement: understand concepts of volume
  - 5.MD.C.3
  - 5.MD.C.4
  - 5.MD.C.5

Grade	*CCSS Domain*	*CCSS Cluster*
5	**Measurement and Data**	**Convert like measurement units within a given measurement system**

Cluster Standard: 5.MD.A.1

Standard	Standards for Mathematical Practice
Convert among different-sized standard measurement units within a given measurement system (e.g., convert 5 cm to 0.05 m), and use these conversions in solving multi-step, real world problems.	• **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...**
• In Grade 5, students extend their abilities from Grade 4 (4.MD.A.1) to express measurements in larger or smaller units within a measurement system. This is an excellent opportunity to reinforce notions of place value for whole numbers and decimals, and make connections between fractions and decimals (e.g., 2 1/2 meters can be expressed as 2.5 meters or 250 centimeters).	• Recognize units of measurement within the same system. • Convert units of measurement within the same system by multiplying or dividing. • Solve multi-step, real world problems that involve converting units
DOK	**Blooms**
1-2	Remember, Understand, Apply

Common Misconceptions

• Students may not pay attention to the units of measurement and try to perform operations without converting to a common unit first.	• Students may overgeneralize the base-10 structure and apply it to measurement conversions, such as when subtracting 4 inches from 3 feet, taking one foot from the 3 feet and

	regrouping it as 10 inches.

Grade	*CCSS Domain*	*CCSS Cluster*
5	**Measurement and Data**	**Represent and interpret data**

Cluster Standard: 5.MD.B.2

Standard	Standards for Mathematical Practice
Make a line plot to display a data set of measurements in fractions of a unit (1/2, 1/4, 1/8). Use operations on fractions for this grade to solve problems involving information presented in line plots. For example, given different measurements of liquid in identical beakers, find the amount of liquid each beaker would contain if the total amount in all the beakers were redistributed equally.	• **SMP 2:** Reason abstractly and quantitatively. • **SMP 5:** Use appropriate tools strategically. • **SMP 1**: Make sense of problems and persevere in solving them.
Clarification Statement	**Students Who Demonstrate Understanding Can...**
• Grade 5 students grow in their skill and understanding of fraction arithmetic, including multiplying a fraction by a fraction, dividing a unit fraction by a whole number or a whole number by a unit fraction, and adding and subtracting fractions with unlike denominators. Students can use these skills to solve problems, including problems that arise from analyzing line plots. For example, given five graduated cylinders with different measures of liquid in each, students might find the amount of liquid each cylinder would contain if the total amount in all the cylinders were redistributed equally. (Students in Grade 6 will view the answer to this question as the mean value for the data set in questions.)	• 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, subtracting, multiplying, and dividing fractions.
DOK	**Blooms**
1-2	Remember, Apply

Common Misconceptions	
• Students may confuse various parts of the graph. Consider showing graphs that are incorrectly displayed and discuss why they are incorrect.	

Grade	*CCSS Domain*	*CCSS Cluster*
5	**Measurement and Data**	**Geometric measurement: understand concepts of volume**

Cluster Standard: 5.MD.C.3

Standard	Standards for Mathematical Practice
Recognize volume as an attribute of solid figures and understand concepts of volume measurement. • 5.MD.C.3.A: A cube with side length 1 unit, called a "unit cube," is said to have "one cubic unit" of volume, and can be used to measure volume. • 5.MD.C.3.B: A solid figure which can be packed without gaps or overlaps using n unit cubes is said to have a volume of n cubic units.	• **SMP 6:** Attend to precision. • **SMP 7:** Look for and make use of structure.
Clarification Statement	**Students Who Demonstrate Understanding Can...**
• "Packing" volume is more difficult than iterating a unit to measure length and measuring area by tiling. Students learn about a unit of volume, such as a cube with a side length of 1 unit, called a unit cube.	• Explain that volume is the measurement of the space inside a solid three-dimensional figure. • Explain that a unit cube has 1 cubic unit of volume and is used to measure volume of three-dimensional shapes. • Explain that any solid figure packed without gaps or overlaps and filled with n unit cubes indicates the total cubic units or volume.
DOK	**Blooms**

1	Remember

Grade	*CCSS Domain*	*CCSS Cluster*
5	**Measurement and Data**	**Geometric measurement: understand concepts of volume**

Cluster Standard: 5.MD.C.4

Standard	Standards for Mathematical Practice
Measure volumes by counting unit cubes, using cubic cm, cubic in, cubic ft, and improvised units.	• **SMP 4:** Model with mathematics. • **SMP 5:** Use appropriate tools strategically. • **SMP 6:** Attend to precision.
Clarification Statement	**Students Who Demonstrate Understanding Can...**
• They pack cubes (without gaps) into right rectangular prisms and count the cubes to determine the volume or build right rectangular prisms from cubes and see the layers as they build.	• Measure volume by counting unit cubes, cubic cm, cubic in, cubic ft, and improvised units.
DOK	**Blooms**
1-2	Understand, Apply

Grade	*CCSS Domain*	*CCSS Cluster*
5	**Measurement and Data**	**Geometric measurement: understand concepts of volume**

Cluster Standard: 5.MD.C.5

Standard	Standards for Mathematical Practice
Relate volume to the operations of multiplication and addition and solve real world and mathematical problems involving volume. • 5.MD.C.5.A: Find the volume of a right rectangular prism with whole-number side lengths by packing it with unit cubes, and show that the volume is the same as would be found by multiplying the edge lengths, equivalently by multiplying the height by the area of the base. Represent threefold whole number products as volumes, e.g., to represent the associative property of multiplication. • 5.MD.C.5.B: Apply the formulas V = l × w × h and V = b × h for rectangular prisms to find volumes of right rectangular prisms with whole-number edge lengths in the context of solving real world and mathematical problems. • 5.MD.C.5.C: Recognize volume as additive. Find volumes of solid figures composed of two non-overlapping right rectangular prisms by adding the volumes of the non overlapping parts, applying this technique to solve real world problems	• **SMP 1:** Make sense of problems and persevere in solving them. • **SMP 4:** Model with mathematics. • **SMP 7:** Look for and make use of structure.
Clarification Statement	**Students Who Demonstrate Understanding Can...**
• Students understand that multiplying the length times the width of a right rectangular prism can be viewed as determining how many cubes would be in each layer if the prism were packed with or built up from unit cubes. They also learn that the height of the prism tells how many layers would fit in the prism.	• Identify a right rectangular prism. • Multiply the three dimensions in any order to calculate volume (Commutative and Associative properties). • Recognize that “B” refers to the area of the base. • Recognize volume as additive. • Develop a volume formula for a rectangle prism by comparing volume when filled with cubes to volume by multiplying the height by the area of the base, or when multiplying the edge lengths (l x w x h). • Apply the following formulas to right rectangular prisms having whole number edge lengths in the context of real-world mathematical problems: Volume = length x width x height or Volume = area of base x height. • Solve real world problems by decomposing a solid figure into two non-overlapping right rectangular prisms and adding their volumes. • Find the volume of a right rectangular prism with

	whole number side lengths by packing it with unit cubes.
DOK	**Blooms**
2-3	Understand, Apply, Analyze

Common Misconceptions

• Students might try to measure volume with square or linear units.	• Students may label volume with the wrong unit or read the shorthand for volume as 32 feet cubed rather than accurately reading it as 32 cubic feet.

ASSESSMENT GUIDE

- Convert like measurement units within a given measurement system
- Represent and interpret data
- Geometric measurement: understand concepts of volume

Grade	*CCSS Domain*	*CCSS Strand*
5	**Measurement and Data**	**Convert like measurement units within a given measurement system**
	Sample Task #1 (Constructed Response)	
	Jimmy made 3 quarts of lemonade to serve at lunch. a. How many cups of lemonade did Jimmy make? Show your work or explain how you know. b. After lunch, 2 pints of lemonade remained. How many pints of lemonade did people drink at lunch?	
	Sample Task #2 (Multiple Choice)	
	A sunflower plant grew 73 centimeters in 3 weeks. How many meters did the plant grow in these 3 weeks? A. 0.073 meter B. 0.73 meter C. 7.3 meters D. 7300.0 meters	

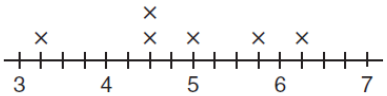
Grade	*CCSS Domain*	*CCSS Strand*
5	**Measurement and Data**	**Represent and interpret data**

Sample Task #1 (Constructed Response)

1. Jack owns a produce stand. He recorded the weights, in pounds, of the baskets of peaches for sale.

$$3\frac{1}{4}, 5\frac{3}{4}, 6\frac{1}{8}, 4\frac{1}{2}, 5, 3\frac{1}{8}, 6\frac{1}{4}, 4\frac{1}{2}$$

Jack made this line plot of the data.



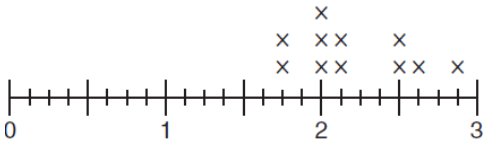
Weights of Baskets of Peaches (pounds)

Jack made some mistakes on his line plot.

a. What mistakes did Jack make on the line plot? Show your work or explain how you know.

Sample Task #2 (Multiple Choice)

2. This line plot shows the heights, in inches, of 11 bean plants.



Bean Plant Heights (inches)

What is the difference in height between the shortest and tallest bean plants?

Ⓐ $\frac{7}{8}$ inches

Ⓑ $1\frac{1}{8}$ inches

Ⓒ $1\frac{6}{8}$ inches

Ⓓ $2\frac{7}{8}$ inches

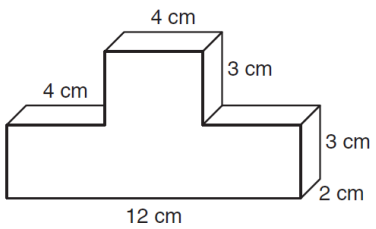
Grade	*CCSS Domain*	*CCSS Strand*
5	**Measurement and Data**	**Geometric measurement: understand concepts of volume**

Sample Task #1 (Constructed Response)

An ice cube tray has two rows of 8 ice cubes. How many ice cubes are in a stack of 12 ice cube trays? Draw a picture to explain your reasoning.

Sample Task #2 (Multiple Choice)

This figure is formed by two rectangular prisms.



What is the volume of the figure?

Ⓐ 28 cubic centimeters
Ⓑ 84 cubic centimeters
Ⓒ 96 cubic centimeters
Ⓓ 120 cubic centimeters

MLSS AND CLR GUIDE

- Convert like measurement units within a given measurement system
- Represent and interpret data
- Geometric measurement: understand concepts of volume

CCSS Domain	*CCSS Cluster*
Measurement and Data	**Convert like measurement units within a given measurement system**

Culturally and Linguistically Responsive Instruction

Relevance to Families and Communities	During a unit focused on conversion of like measurements within a given measurement system, 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 measure the length of three items at home and express the length in standard and customary units.	
Cross-Curricular Connections	Science: In fifth grade the NGSS recommends students work with measurement related to conservation of mass. Consider providing a connection for students to determine the mass of an object in different states in two different units and then convert one unit unto the other to discover that they are equivalent. Art: Making a model of an object involves having to convert from larger to small units. Consider providing a connection for students to make a scaled model of something involving simple polygons or polyhedrons.	
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?*	• Using and Connecting Mathematical Representations: The standard for mathematical practice, use appropriate tools strategically, provides a strong foundation to validate and bridge for students. Mathematical representations are mathematical tools. The linguistic and cultural experiences of students provide different and varied types of representations for solving mathematical problems. By explicitly encouraging students to use multiple mathematical representations students can draw on their "mathematical, social, and cultural competence". By valuing these representations and discussing them we can connect student representations to the representations of school mathematics and build a bridge for students to position them as competent and capable mathematicians. For example, when studying conversion of like measurement units within the given measurement system the use of mathematical representations within the classroom is critical because students' knowledge and experiences will be used as resources for mathematical learning. Students will utilize their experience with conversions while using tools such as conversion charts and models of base ten conversions within the metric system. Students will discover the relationship between base ten conversions within the metric system to make connections to their background knowledge. They will use this experience to make sense of word problems they solve using customary and standard measurement conversions.

Planning for Multi-Layered System of Supports

Vertical Alignment		
Previous Learning	***Current Learning***	***Future Learning***
• Connect to understanding the relative sizes of measurement units within a system. **(4.MD.1)** • Connect to using the four operations to solve word problems including problems involving fractions or decimals, and problems that require expressing measurements given in a larger unit in terms of a smaller unit. **(4.MD.2)**	• Connect to the powers of 10, which relates to converting metric measurements. **(5.NBT.2)** • Connect to working to perform operations with multi-digit whole numbers and with decimals to hundredths. **(5.NBT.5-7)**	• Connect to using ratios to convert measurement units. Connect to manipulating and transforming units appropriately when multiplying or dividing quantities. **(6.RP.3d)**

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 uses images/resources (especially those being used the first time) when studying conversion of like measurement units within a given measurement system, because in this cluster students begin with using a table to make conversions. They will convert both customary and standard measurements within the same system of measurement and solve multistep word problems. 5th graders will discover base 10 conversions within the metric system, 1 kilometer= 1,000 meters.
Intensive	*What critical understandings will prepare students to access the mathematics for this cluster?*	3.OA.C.7: This standard provides a foundation for work with conversion of like measurement units within a given measurement system, because students multiply and divide within 100. 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?	For example, students may benefit from re-engaging with content during a unit on conversion of like measurement units within a given measurement system by clarifying mathematical ideas and/or concepts through a short mini-lesson because focus should be on how to convert measurements into larger or smaller units within a measurement system by reinforcing place value for whole numbers and decimals.
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 on conversion of like measurement units within a given measurement system by confronting student misconceptions because some students may not pay attention to the unit of measurement when subtracting. For example, when subtracting 5 inches from 2 feet (2ft-5in), students may incorrectly think the answer is 1 ft. 5 inches instead of 1 foot and 7 inches. To address this misconception, talk about and show the example of using 2 twelve-inch rulers, then subtract.

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?	For example, some learners may benefit from an extension such as open ended tasks linking multiple disciplines when studying the conversion of like measurement units within a given measurement system because it promotes student practice to solve real world problems involving conversions, use the vocabulary associated with the metric and customary conversions, and gain understanding on the relationship between units and how to do conversions.

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 representation and interpretation of 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 measure their families' hand to the nearest ⅛ of an inch, construct a line plot with the information gathered and display, analyze, and interpret their family line plot.	
Cross-Curricular Connections	Science: In fifth grade the NGSS recommends students work with measurement related to conservation of mass. Consider providing a connection for students to determine the mass of various objects in different states in that measure in fractional units. Then have students graph and analyze that data. Social Studies: In fifth grade the New Mexico Social Studies Standards state students should "gather, organize and interpret information using a variety of media and technology". Consider having students gather, graph and analyze data that contains measurements in fractions of a unit.	
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?*	• Supporting Productive Struggle in Learning Mathematics: The standard for mathematical practice, makes sense of mathematics and persevere in solving them is the foundation for supporting productive struggle in the mathematics classroom. "Too frequently, historically marginalized students are overrepresented in classes that focus on memorizing and practicing procedures and rarely provide opportunities for students to think and figure things out for themselves. When students in these classes struggle, the teacher often tells them what to do without building their capacity for persistence." Teachers need to provide tasks that challenge students and maintain that challenge while encouraging them to persist. This encouragement or "warm-demander" requires a strong relationship with students and an understanding of the culture of the students. For example, when studying representation and interpretation of data supporting productive struggle is critical because students will need to make sense of measured objects and plots on a number line to solve everyday problems. Students will use reasoning and connections to their background to display, interpret, and analyze their own line plots.

Planning for Multi-Layered System of Supports

Vertical Alignment

Previous Learning	*Current Learning*	*Future Learning*
• Connect to generating data by measuring lengths and making line plots using that data. **(3.MD.4)** • Connect to solving addition and subtraction problems using the data on line plots. **(4.MD.4)**	• Connect to growing in their skill and understanding of fraction arithmetic. **(5.NF)**	• Connect to displaying numerical data in plots on number lines, dot plots, histograms, and boxplots and choosing the most appropriate graph/plot for the data. **(6.SP.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?*	For example, some learners may benefit from targeted pre-teaching that previews new contexts for tasks within the unit (e.g., cell phone plans) when studying representation and interpretation of data because this cluster focuses on solving problems using line plots created to display measurement data in fractions of a unit.
Intensive	*What critical understandings will prepare students to access the mathematics for this cluster?*	4.MD.B.4: This standard provides a foundation for work with representation and interpretation of data because students begin to make a line plot to display a data set of measurements in fractions of a unit (1/2, 1/4, 1/8) and solve problems involving addition and subtraction of fractions by using information presented in line plots. 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?	For example, students may benefit from re-engaging with content during a unit on representation and interpretation of data by clarifying mathematical ideas and/or concepts through a short mini-lesson because students are building their experience in measuring objects to one-eighth of a unit, constructing a line plot with information gathered, and display, analyze, and interpret their own line plot.
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 on representation and interpretation of data by helping students move from specific answers to generalizations for certain types of problems because some students may not know what measurement to use if the object measures between ⅛ and ¼ inch. To address this, help students understand that approximations can be used to measure to the closest ⅛ inch and ¼ inch.

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?	For example, some learners may benefit from an extension such as open ended tasks linking multiple disciplines when studying representation and interpretation of data because data is more meaningful to students if it is their own project or idea; students create their own data, measure objects to the nearest ⅛ inch, construct line plot, and display, analyze, and interpret their line plot to draw conclusions.

CCSS Domain	*CCSS Cluster*
Measurement and Data	**Geometric measurement: understand concepts of volume**

Culturally and Linguistically Responsive Instruction

Relevance to Families and Communities	During a unit focused on understanding volume concepts, 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, comparing the volume of multiple structures/objects found at home, or in the

	community will help students gain a deeper understanding of volume. Reasoning about the capacity of different size rooms in the home or around the community may help students make a connection to the significance of volume. Connecting packing cubes into a rectangular prism and packing items into a storage shed, or packages into a mail delivery truck may help students connect schoolwork to real-world examples found within the home or community.	
Cross-Curricular Connections	Science: In fifth grade the NGSS states students should "describe and graph quantities such as area and volume to address scientific questions." Consider providing a connection for students to determine the volume of cubes or rectangular prisms as part of their investigation. Art: Drawing boxes is connected to developing the ability to indicate perspective in a drawing. Consider providing an opportunity for students to sketch various boxes with the same volume but different dimensions. Also, consider allowing students to make boxes to pack inside of larger boxes (measuring 1in. X 1in. X 1in. or 1 cm. X 1cm. X 1cm.). Have students predict how many boxes can fit inside of the premade larger boxes. Connect the number of boxes used to the volume of the box. Allowing students to cut, and construct boxes will help with their fine motor skills.	
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?*	• Equity Based Practice (Using and Connecting Mathematical Representations): The standard for mathematical practice, use appropriate tools strategically, provides a strong foundation to validate and bridge for students. Mathematical representations are mathematical tools. The linguistic and cultural experiences of students provide different and varied types of representations for solving mathematical problems. By explicitly encouraging students to use multiple mathematical representations students can draw on their "mathematical, social, and cultural competence". By valuing these representations and discussing them we can connect student representations to the representations of school mathematics and build a bridge for students to position them as competent and capable mathematicians. For example, when studying understanding volume 63 6 concepts, the use of mathematical representations within the classroom is critical because students can use a variety of mathematical representations that they are already familiar with. This helps students connect to prior knowledge and allows them to use what they already know to connect to new concepts. Encourage students to use examples of things they see and experience in their everyday lives as mathematical

		representations of volume. Validate students' thinking, as they make connections to volume in the real-world and within their own environments. Encourage students to use multiple representations to show their mathematical thinking around volume and their everyday lives. Allowing students the time to share ideas, thoughts, and representations will give students an insight into the lives of other students.

Planning for Multi-Layered System of Supports

Vertical Alignment

Previous Learning	*Current Learning*	*Future Learning*
• Connect to creating 3-D shapes. **(1.G.2b)** • Connect to learning to measure area using unit squares **(3.MD.6)** • Connect to applying the formulas to determine area and perimeter of rectangles. **(4.MD.3)**	• Connect to fluently multiplying multi-digit whole numbers. **(5.NBT.5)**	• Connect to finding the volume of right rectangular prisms with fractional dimensions in the context of solving real-world and mathematical problems. **(6.G.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?*	For example, some learners may benefit from targeted pre-teaching that uses images/resources (especially those being used the first time) when studying understanding of volume concepts because "this is the first time that students begin exploring the concept of volume. In previous grades students worked with area and covering spaces. The concept of volume should be extended from area with the idea that students are covering an area (the bottom of a cube) with a layer of unit cubes and then adding layers of unit cubes on top of the bottom layer. Students should have ample experiences with concrete manipulatives before moving to pictorial representations." Students will then derive the formula for calculating volume from their concrete

		understanding based on model representations.
Intensive	*What critical understandings will prepare students to access the mathematics for this cluster?*	3.MD.C.5 Recognize area as an attribute of plane figures and understand concepts of area measurement: This standard provides a foundation for work with understanding volume concepts because students use their understanding of area to make sense of volume. 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***

• Volume is an attribute of solid figures and is measured in cubic units.
• Volume is filling an object without gaps and without overlaps.
• Volume can be found by multiplying dimensions or by multiplying height by the area of the base.
• Volume of two right rectangular prisms is additive.
	• Measure volume by counting unit cubes
	• Find volume by packing a right rectangular prism with unit cubes.
	• Use dimensions to write and apply the formula for volume for right rectangular prisms.
	• Find the volume of solid figures composed of two non-overlapping right rectangular prisms.
		• Build on students' experience with the following skills:
		  ○ Calculate the area of a base (l x w)
		  ○ Recognize that volume is an attribute of a three-dimensional space.
		  ○ Decompose three-dimensional rectangular prisms into layers and arrays of cubes.
		  ○ Count squares to find area will now be count cubes to find volume
		
		• 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:
		  ○ **Snap cubes**
		  ○ **Centimeter cubes**
		  ○

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?	For example, students may benefit from re-engaging with content during a unit on understanding volume concepts by examining tasks from a different perspective through a short mini lesson because students can gain a better understanding of concepts by analyzing models created by other students. There are multiple ways models can be constructed and used to calculate volume. Students will gain a deeper understanding of volume by engaging with models created by other students. Give students the opportunity to analyze, engage and interact with multiple perspectives/models of representation. Allow students the time to explain their thinking and make connections between different methods of representation.
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 of understanding volume concepts by addressing conceptual understanding because students must understand what volume is before they can interact with real-world problems involving volume. Allow students time to deconstruct pre-made models in an attempt to understand that "volume is the amount of space that an object takes up and is measured in cubic units such as cubic inches or cubic centimeters"; hence the model is constructed of 3-dimensional cubes (measuring 1in. X 1in. X 1in. or 1 cm. X 1cm. X 1cm.).

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?	For example, some learners may benefit from an extension such as the application of and development of abstract thinking skills when studying understanding of volume concepts because they are able to grasp the concepts of volume easily. Allow these students to derive and use formulas for calculating volume based on their conceptual understanding of volume. These students will benefit from interacting with real-world problems

	involving volume in which they need to use a formula to solve. Allow students to show their thinking through images, concepts, facts, language, and procedures2. Expose students to questions that require them to calculate multiple numerical volumes and combine or decompose them, in order to arrive at a solution. Expose students to real-world mathematical problems that are connected to other discipline areas (e.g., science/social studies). Students may also benefit from problems that have multiple solutions based on the strategy the student applies.

New Mexico Instructional S

5th Grade Numbers and Operations in B

Guide

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

New Mexico Instructional S

5th Grade Numbers and Operations in B

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

- Understand the place value system
  - 5.NBT.A.1
  - 5.NBT.A.2
  - 5.NBT.A.3
  - 5.NBT.A.4
- Perform operations with multi-digit whole numbers and with decimals to hundredths
  - 5.NBT.B.5
  - 5.NBT.B.6
  - 5.NBT.B.7

Grade	CCSS Domain	CCSS Cluster
5	Numbers and Operations in B Ten	Understand the place value system

Cluster Standard: 5.NBT.A.1

Standard	Standards for Mathematical Practice
Recognize that in a multi-digit number, a digit in one place represents 10 times as much as it represents in the place to its right and 1/10 of what it represents in the place to its left.	• **SMP 2:** Reason abstractly and quantitatively. • **SMP 7:** Look for and make use of structure.
Clarification Statement	**Students Who Demonstrate Understanding Can...**
• Students extend their understanding of the base-ten system to the relationship between adjacent places, how numbers compare, and how numbers round for decimals to thousandths. This standard calls for students to reason about the magnitude of numbers. Students should work with the idea that the tens place is ten times as much as the ones place, and the ones place is 1⁄10th the size of the tens place. Based on the base-10 system, digits to the left are 10 times as great as digits to the right; likewise, digits to the right are 1⁄10th of digits to the left.	• Explain that in a multi-digit number, a digit in one place represents 10 times as much as it represents in the place to its right and 1⁄10 of what it represents in the place to its left.
DOK	**Blooms**
1	Understand

Grade	CCSS Domain	CCSS Cluster
5	Numbers and Operations in B Ten	Understand the place value system

Cluster Standard: 5.NBT.A.2

Standard	Standards for Mathematical Practice
Explain patterns in the number of zeros of the product when multiplying a number by powers of 10, and explain patterns in the placement of the decimal point when a decimal is multiplied or divided by a power of 10. Use whole-number exponents to denote powers of 10.	• **SMP 7:** Look for and make use of structure.
Clarification Statement	**Students Who Demonstrate Understanding Can...**
• Multiplying by a power of 10 shifts the digits of a whole number or decimal that many places to the left. Patterns in the number of 0s in products of a whole number and a power of 10 and the location of the decimal point in products of decimals with powers of 10 can be explained in terms of place value. Because students have developed their understanding of and computations with decimals in terms of multiples rather than powers, connecting the terminology of multiples with that of powers affords connections between understanding of multiplication and exponentiation. (Progressions for the CCSSM, Number and Operation in Base Ten, CCSS Writing Team, April 2011, page 16) This standard includes multiplying by multiples of 10 and powers of 10, including 102 which is 10 x 10=100, and 103 which is 10 x 10 x 10=1,000. Students should have experiences working with connecting the pattern of the number of zeros in the product when you multiply by powers of 10.	• Represent powers of 10 using whole number exponents. • Translate between powers of 10 written as 10 raised to a whole number exponent, the expanded form, and standard notation. • Explain the patterns in the number of zeros of the product when multiplying a number by powers of 10. • Explain the relationship of the placement of the decimal point when a decimal is multiplied or divided by a power of 10.

Students should reason that the exponent above the 10 indicates how many places the decimal point is moving (not just that the decimal point is moving but that you are multiplying or making the number 10 times greater three times) when you multiply by a power of 10. Since we are multiplying by a power of 10 the decimal point moves to the right.	
DOK	**Blooms**
1	Understand, Apply

Grade	*CCSS Domain*	*CCSS Cluster*
5	Numbers and Operations in B Ten	Understand the place value system

Cluster Standard: 5.NBT.A.3

Standard	**Standards for Mathematical Practice**
Read, write, and compare decimals to thousandths • 5.NBT.A.3a: Read and write decimals to thousandths using base-ten numerals, number names, and expanded form, e.g., 347.392 = 3 × 100 + 4 × 10 + 7 × 1 + 3 × (1/10) + 9 × (1/100) + 2 × (1/1000). • 5.NBT.A.3a: Compare two decimals to the thousandths based on the meanings of the digits in each place, using >,=,< symbols to record results of comparisons.	• **SMP 5:** Use appropriate tools strategically.
Clarification Statement	**Students Who Demonstrate Understanding Can...**
• This standard reference expanded the form of decimals with fractions included and compared decimals builds on work from fourth grade. This standard refers to rounding. Students should go	• Read and write decimal to thousandths using base-ten numerals, number names, and expanded form. • Use >, =, and < symbols to record the results of

beyond simply applying an algorithm or procedure for rounding. The expectation is that students have a deep understanding of place value and number sense and can explain and reason about the answers they get when they round. Students should have numerous experiences using a number line to support their work with rounding. Students should use benchmark numbers to support this work. Benchmarks are convenient numbers for comparing and rounding numbers. 0., 0.5, 1, 1.5 are examples of benchmark numbers.	comparisons between decimals. • Compare two decimals to the thousandths, based on the place value of each digit. • Use knowledge of base ten and place value to round decimals to any place.
DOK	**Blooms**
1	Understand, Analyze

Grade	*CCSS Domain*	*CCSS Cluster*
5	Numbers and Operations in B Ten	Understand the place value system

Cluster Standard: 5.NBT.A.4

Standard	**Standards for Mathematical Practice**
Use place value understanding to round decimals to any place.	• **SMP 7:** Look for and make use of structure.
Clarification Statement	**Students Who Demonstrate Understanding Can...**
• Students have a deep understanding of place value and number sense by explaining and giving reasons about the answers they get when they round. Students should have numerous experiences using a number line to support their work with rounding. When rounding a decimal to a given place, students may identify the two	• Explain why the value of digits depends on its place. • Round decimals to any place.

possible answers, and use their understanding of place value to compare the given number to the possible answers.	

Common Misconceptions

• Students may try to extend a shallow understanding of whole number place value to decimal place. • Students may think the more digits after a decimal point the greater the number.	• Students can confuse the language describing the relationship between place values for whole numbers and decimal numbers. • Students memorize a rule of “adding zeros” to make the powers of 10 and then misapply this “rule”.

Grade	*CCSS Domain*	*CCSS Cluster*
5	Numbers and Operations in B Ten	Perform operations with multi-digit whole numbers a with decimals to hundredths

Cluster Standard: 5.NBT.B.5

Standard	Standards for Mathematical Practice
Fluently multiply multi-digit whole numbers using the standard algorithm.	• **SMP 7:** Look for and make use of structure.
Clarification Statement	**Students Who Demonstrate Understanding Can...**
• In fifth grade, students fluently compute products of whole numbers using the standard algorithm. Underlying this algorithm are the properties of operations and the base-ten system. Division strategies in fifth grade involve breaking the dividend apart into like base-ten units and applying the distributive property to find the quotient place by place, starting from the highest place. (Division can also be viewed as finding an	• Multiply multi-digit whole numbers using the standard algorithm.

unknown factor: the dividend is the product, the divisor is the known factor, and the quotient is the unknown factor.) Students continue their fourth-grade work on division, extending it to computation of whole number quotients with dividends of up to four digits and two-digit divisors. Estimation becomes relevant when extending to two-digit divisors. Even if students round appropriately, the resulting estimate may need to be adjusted.	
DOK	**Blooms**
1	Apply

Grade	*CCSS Domain*	*CCSS Cluster*
5	Numbers and Operations in B Ten	Perform operations with multi-digit whole numbers a with decimals to hundredths

Cluster Standard: 5.NBT.B.6

Standard	**Standards for Mathematical Practice**
Find whole-number quotients of whole numbers with up to four-digit dividends and two-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.	• **SMP 1:** Make sense of problems and persevere in solving them.
Clarification Statement	**Students Who Demonstrate Understanding Can...**

• This standard references various strategies for division. Division problems can include remainders. Even though this standard leads more towards computation, the connection to story contexts is critical. Make sure students are exposed to problems where the divisor is the number of groups and where the divisor is the size of the groups. In fourth grade, students' experiences with division were limited to dividing by one-digit divisors. This standard extends students' prior experiences with strategies, illustrations, and explanations. When the two-digit divisor is a "familiar" number, a student might decompose the dividend using place value.	• Explain calculations using equations or models that represent understanding of division. • Find whole number quotients of whole numbers with four-digit dividends and two-digit divisors. • Use multiple strategies to solve division problems.
DOK	**Blooms**
1	Understand, Apply

Grade	*CCSS Domain*	*CCSS Cluster*
5	Numbers and Operations in B Ten	Perform operations with multi-digit whole numbers a with decimals to hundredths

Cluster Standard: 5.NBT.B.7

Standard	Standards for Mathematical Practice
Add, subtract, multiply, and divide decimals to hundredths, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and	• **SMP 3:** Construct viable arguments and critique the reasoning of others.

explain the reasoning used.	
Clarification Statement	**Students Who Demonstrate Understanding Can...**
• In fourth grade, students' experiences with division were limited to dividing by one-digit divisors. This standard extends students' prior experiences with strategies, illustrations, and explanations. When the two-digit divisor is a "familiar" number, a student might decompose the dividend using place value.	• Justify reasoning with written explanation. • Explain how place value affects how to use the four operations. • Use the four operations with decimals to the hundredths. • Use models or drawings.
DOK	**Blooms**
1	Apply, Analyze

Common Misconceptions

• Students who only memorize steps for algorithms without understanding will confuse the "steps" in the addition algorithm with the "steps" in the multiplication algorithm.	• Students might compute the sum or difference of decimals by lining up the right-hand digits as they would the whole number.

Student Discourse Guide

- Purposeful, rich classroom discourse offers students the opportunity to express their ideas, th critique the reasoning of others in a variety of ways (writing, drawing, verbal). Purposeful imple 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 path and reveal knowledge or misunderstandings to educators. The process also allows educators to know students culture, lived experiences and evolving math identities.
- Discourse that focuses on tasks that promote reasoning and problem solving is a primary mec developing conceptual understanding and meaningful learning (Michaels, O'Connor, and

Resnick, 2008)	
Domain: Numbers and Operations in Base Te	Strand: Perform operations with multi-digit whole numbers and with decimals to hundredths
Suggested Student Discourse Questions	
• What strategies work best for you when using p products to solve division problems? • Thinking about the context of this division probl what does the remainder mean?	• How do you decide which operation to use to s problem? • How can you explain your thinking in written form?

ASSESSMENT GUIDE

- Understand the place value system
- Perform operations with multi-digit whole numbers and with decimals to hundredths

Grade	*CCSS Domain*	*CCSS Strand*
5	Numbers and Operations in B Ten	Understand the place value system

Sample Task #1 (Constructed Response)

This shows one way to represent the number π.

3.14159 . . .

a. How does the value of the 1 to the right of the digit 4 compare to the 1 to the left of the digit 4?

Sample Task #2 (Multiple Choice)

Which comparisons are true? Select the two correct answers.

A. 0.040 = 0.04
B. 0.095 = 0.950
C. 0.85 < 0.825
D. 1.11 < 0.999
E. 2.09 > 2.089

	F. 3.055 >3.22

Grade	CCSS Domain	CCSS Strand
5	Numbers and Operations in B Ten	Perform operations with multi-digit whole number and with decimals to hundredths
	Sample Task #1 (Constructed Response)	
	An office space in New York City measures 48 feet by 56 feet. If it sells for $565 per square foot, what is the total cost of the office space?	
	Sample Task #2 (Multiple Choice)	
	Maria has 207 beads to make necklaces. She wants to put 9 beads on each necklace. What is the greatest number of necklaces Maria can make? A. 20 B. 23 C. 30 D. 33	

MLSS AND CLR GUIDE

- Understand the place value system
- Perform operations with multi-digit whole numbers and with decimals to hundredths

New Mexico Instructional S
5th Grade Numbers and Operations in B
Guide

CCSS Domain	*CCSS Cluster*
Numbers and Operations in Bas	Understand the place value system

Culturally and Linguistically Responsive Instruction

Relevance to Families and Communities	During a unit focused on understanding the place value system, 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 decimals are used in the home and community can a be a great way to connect schools tasks with home tasks.	
Cross-Curricular Connections	STEM: Using given or collected data, round numbers to a given whole number or decimal place to solve real-world problems. Science: Provide students opportunities to take precise measurements. Have students round these measurements to the nearest tenth, hundredth, or thousandths.	
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*	• 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 understanding the place value system the types of mathematical tasks are critical because building conceptual understanding for place value is essential to fifth grade mathematics. For example, when multiplying 32 x 1000, students should understand that the product represents 32 groups of 1000, or "thirty-two thousands," which is written as 32,000. When teachers focus on the procedure of "adding zeros," students miss the opportunity to build the conceptual understanding which is critical for working with decimals.

	school and society?	

Planning for Multilayered System of Supports

Vertical Alignment

Previous Learning	*Current Learning*	*Future Learning*
• **4.NBT.A.1** Recognize that in a multi-digit whole number, a digit in one place represents ten times what it represents in the place to its right. For example, recognize that 700 ÷ 70 = 10 by applying concepts of place value and division. • **4.NF.C.5** Express a fraction with denominator 10 as an equivalent fraction with denominator 100 and use this technique to add two fractions with respective denominators 10 and 100. * For example, express 3/10 as 30/100, and add 3/10 + 4/100 = 34/100. • **4.NF.C.6** Use decimal notation for fractions with denominators 10 or 100. For example, rewrite 0.62 as 62/100; describe a length as 0.62 meters; locate 0.62 on a number line diagram. • **4.NF.C.7** Compare two decimals to hundredths by reasoning about their size. Recognize that comparisons are valid only when the two decimals refer to the same whole. Record the results of comparisons with the symbols >, =, or <, and justify the conclusions, e.g., by using a visual model.	• **5.NBT.B.5** Fluently multiply multi-digit whole numbers using the standard algorithm. • **5.NBT.B.6** Find whole-number quotients of whole numbers with up to four-digit dividends and two-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models. • **5.NBT.B.7** Add, subtract, multiply, and divide decimals to hundredths, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used.	• **6.NS.B.3** Fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation. • **6.NS.B.3** Fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation. • **6.EE.A.1** Write and evaluate numerical expressions involving whole-number exponents.

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 rehearses prior learning when studying understanding the place value system because students are extending prior knowledge of place value from previous years to include place value patterns, reading, writing, and comparing decimal numbers, and rounding decimals.
Intensive	*What critical understandings will prepare students to access the mathematics for this cluster?*	4.NBT.A.2: This standard provides a foundation for work with understanding the place value system because reading and writing whole numbers in expanded notation reinforces understanding of the value of each digit in a number and how those values relate to one another. 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***

• A digit in one place represents $\frac{1}{10}$times less than the place to its left.
• Why multiplying by a power of 10 shifts the digits of a whole number or decimal that many places to the left.
• The equivalence of decimal numbers and fractions.
• The equivalence of two decimal numbers.
	• Use patterns in the number of zeros and the placement of the decimal point when multiplying and dividing by powers of 10.
	• Use whole number exponents to denote powers of 10.
	• Use base-ten numerals, number names, and expanded form to read and write decimals to thousandths place.
		• Build on students' experience with the following skills:
		  ○ Recognize that in a multi-digit whole number, a digit in one place represents ten times what it represents in the place to its right. (4.NBT.1)
		  ○ Multiplying whole numbers by powers of ten (3.NBT.3)
		  ○ Relating decimals to fractions (for example, 3 tenths can be expressed as 3/10 or 0.3.) (4.NF.5, 4.NF.6)
		  ○ Understanding that decimals are fractional parts of a whole.
		• Cognitive Strategies
		  ○ Repeatedly model the strategies
		  ○ Monitor the students' use of the strategies

	• Use place value understanding and number line models to round decimal numbers to a given place.	○ 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: ○ Number Lines ○ Place Value Charts ○ Base ten blocks

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?	For example, students may benefit from re-engaging with content during a unit on understanding the place value system by clarifying mathematical ideas and/or concepts through a short mini lesson because students may benefit from additional modeling. Provide a variety of experiences and activities in which students model and write base-ten numerals on a place value chart. Modeling reading the decimal numbers correctly will support the meaning of number place value.
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 the place value system by <addressing conceptual understanding because students require both concrete experiences and written activities to build their comprehension of decimals.

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?	For example, some learners may benefit from an extension such as the application of and development of abstract thinking skills when studying understanding the place value system because it leads the students to more

	generalized thinking about place patterns. Use question stems to help students make connections, for example, "What do you notice about…?" "Why do you think that works?" "Will that always be true when you…?" "Can you find an example of when that is not true?"

CCSS Domain	*CCSS Cluster*
Numbers and Operations in Bas	Perform operations with multi-digit whole numbers and with decimals hundredths

Culturally and Linguistically Responsive Instruction

Relevance to Families and Communities	During a unit focused on operations with multi-digit whole numbers and with decimals to hundredths, 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 money and how it breaks down into decimals when paying for something. Making a grocery list and adding up the total amount a person needs to pay and subtract that from a specific amount that will be paid to see what the change (difference) will be. Understanding that we use dollars in the form of whole numbers and cents in the form of decimal numbers.	
Cross-Curricular Connections	STEM: Using given or collected data, round numbers to a given whole number or decimal place to solve real-world problems.	
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*	• Using and Connecting Mathematical Representations: The standard for mathematical practice, use appropriate tools strategically, provides a strong foundation to validate and bridge for students. Mathematical representations are mathematical tools. The linguistic and cultural experiences of students provide different and varied types of representations for solving mathematical problems. By explicitly encouraging students to use multiple mathematical representations students can draw on their "mathematical, social, and cultural competence". By valuing these representations and discussing them we can connect student representations to the representations of school mathematics and build a bridge for students to position them as competent and capable mathematicians. For example, when studying to perform operations with multi-digit whole numbers

	culture and language of school mathematics to support students in creating mathematical identities as capable mathematicians that can use mathematics within school and society?	and with decimals to hundredths the use of mathematical representations within the classroom is critical because students' affirmation and validations of home language and culture is used by allowing them to use different representations for effective algorithm form. They can use models, strategies, place value, problem contexts, area models, number lines, and partial products to solve whole number problems and make the connection to decimal numbers.

Planning for Multilayered System of Supports

Vertical Alignment

Previous Learning	*Current Learning*	*Future Learning*
• Connect to using place value understanding and properties of operations to perform multi-digit arithmetic. **(4.NBT.4,5,6)**	• Connect to understanding the place value concept that the number to the left is 10 times larger and the number to the right is 10 times smaller, will use exponents to express powers of 10 and can understand the patterns of zeros and decimal placement related to powers of 10. **(5.NBT.1,2)** • Connect to applying and extend their previous understandings of multiplication and division to multiply and divide fractions. **(5.NF.1,3,4,6,7)** • Connect to converting customary and metric measurement units within a given measurement system. **(5.MD.1)**	• Connect to fluently adding, subtracting, multiplying, and dividing decimals using the standard algorithm. **(6.NS.2,3)** • Connect to recognizing that in a multi-digit number, a digit in one place represents 10 times as much as it represents in the place to its right and 1/10 of what it represents in the place to its left. **(5.NBT.A.1)** • Connect to read, write, and compare decimals to thousandths. **(5.NBT.A.3)**

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 rehearses prior learning when studying operations with multi-digit whole numbers and with decimals to hundredths because in previous grade levels, students began with modeling and exploring the meaning of whole and two-digit number multiplication. At this point, students need to continue multiplying and dividing multi-digit numbers to make the connections between whole numbers and decimal numbers.
Intensive	*What critical understandings will prepare students to access the mathematics for this cluster?*	3.OA.B.5: This standard provides a foundation for work with performing operations with multi-digit whole numbers and with decimals to hundredths because students start applying the property of operations as strategies to multiply and divide by using the commutative property of multiplication, associative property of multiplication, and distributive property.. 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 connection between previous models for multiplication, such as area models, and the US standard algorithm.
• The connection between previous work with one-digit divisors to dividing by multiples of 10.
• The connection between the meaning of all four operations with whole numbers to addition,
	• Multiply multi-digit whole numbers using multiple strategies including the US standard algorithm.
	• Divide a number up to four-digits by a two-digit number using a variety of models and strategies.
	• Solve addition, subtraction, multiplication, and division problems involving decimals.
		• Build on students' experience with the following skills:
		  ○ Multiplying one-digit by four digit whole numbers using various strategies (4.NBT.5)
		  ○ Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.(4.NBT.5)
		  ○ Moving from place value/partial product multiplication models into the standard algorithm
		  ○ Use place value strategies (equations, rectangular arrays, area models) to understand the relationship between multiplication and division (4.NBT.6)
		
		• Cognitive Strategies
		  ○ Repeatedly model the strategies

subtraction, multiplication, and division of decimals.		○ 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: ○ Area models and/or open arrays ○ Partial product equations

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?	For example, students may benefit from re-engaging with content during a unit on performing operations with multi-digit whole numbers and with decimals to hundredths by revisiting student thinking through a short mini-lesson because it is important to ensure students are comprehending the relationship between multiplication and division with decimal numbers. In the same way, students will be encouraged to explain their thinking about a specific problem.
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 performing operations with multi-digit whole numbers and with decimals to hundredths by confronting student misconceptions because students need to understand the importance of place value, regrouping, and remainders when solving operations.

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?	For example, 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 performing operations with multi-digit whole numbers and with decimals to hundredths because students could continue with the division algorithm which is exposed in sixth grade.