New Mexico Instructional Scope

Kindergarten Counting and Cardinality Guide

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

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

In this guide you will find:

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

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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

- Know number names and the count sequence.
  - K.CC.A.1
  - K.CC.A.2
  - K.CC.A.3
- Count to tell the number of objects.
  - K.CC.B.4
  - K.CC.B.5
- Compare Numbers.
  - K.CC.C.6
  - K.CC.C.7

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Grade	*CCSS Domain*	*CCSS Cluster*
K	**Counting and Cardinality**	**Know number names and the count sequence.**

Cluster Standard: K.CC.A.1

Standard	**Standards for Mathematical Practice**
Count to 100 by ones and by tens.	• **SMP 6:** Attend to precision. • **SMP 8:** Look for and express regularity in repeated reasoning.
Clarification Statement	**Students Who Demonstrate Understanding Can...**
• The emphasis of this cluster is on the counting sequence. • When counting by ones, students need to understand that the next number in the sequence is one more. When counting by tens, the next number in the sequence is "ten more" (or one more group of ten). Students should be able to count forward from any number, 1-99. Students should be given multiple opportunities to count objects and recognize that a number represents a specific quantity.	• Count to 100 by ones, increasing their range with time. • Count to 100 by tens.
DOK	**Blooms**
1	Remember

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Grade	*CCSS Domain*	*CCSS Cluster*
K	**Counting and Cardinality**	**Know number names and the count sequence.**

Cluster Standard: K.CC.A.2

Standard	Standards for Mathematical Practice
Count forward beginning from a given number within the known sequence (instead of having to begin at 1).	• **SMP 6:** Attend to precision. • **SMP 7:** Look for and make use of structure.
Clarification Statement	**Students Who Demonstrate Understanding Can...**
• The emphasis of this cluster is on the counting sequence. • When counting by ones, students need to understand that the next number in the sequence is one more. When counting by tens, the next number in the sequence is “ten more” (or one more group of ten). Students should be able to count forward from any number, 1-99. Students should be given multiple opportunities to count objects and recognize that a number represents a specific quantity.	• Count forward from a random starting number, instead of 1, increasing their range with time.
DOK	**Blooms**
1-2	Remember and Understand

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Grade	*CCSS Domain*	*CCSS Cluster*
K	**Counting and Cardinality**	**Know number names and the count sequence.**

Cluster Standard: K.CC.A.3

Standard	Standards for Mathematical Practice
Write numbers from 0 to 20. Represent a number of objects with a written numeral 0-20 (with 0 representing a count of no objects).	• **SMP 2:** Reason abstractly and quantitatively. • **SMP 8:** Look for and express regularity in repeated reasoning.
Clarification Statement	**Students Who Demonstrate Understanding Can...**
• The emphasis of this cluster is on the counting sequence. • When counting by ones, students need to understand that the next number in the sequence is one more. When counting by tens, the next number in the sequence is "ten more" (or one more group of ten). Students should be able to count forward from any number, 1-99. Students should be given multiple opportunities to count objects and recognize that a number represents a specific quantity.	• Students can write numbers 1-20, increasing their range with time. • Represent up to 20 objects with written numerals, no matter the arrangement of the objects. • Recognize the relationship between 0 and no objects.
DOK	Blooms
1	Remember

Common Misconceptions

• Struggling with continuous counting and skipping numbers. • Being confused by the names for the teen numbers.	• Not seeing 0 as a number. • Inverting and/or reversing numerals.

• Believing that counting must always start at 1.	

Grade	*CCSS Domain*	*CCSS Cluster*
K	**Counting and Cardinality**	**Count to tell the number of objects.**

Cluster Standard: K.CC.B.4

Standard	Standards for Mathematical Practice
Understand the relationship between numbers and quantities; connect counting to cardinality. • **K.CC.B.4.A**: When counting objects, say the number names in the standard order, pairing each object with one and only one number name and each number name with one and only one object. • **K.CC.B.4.B:** Understand that the last number name called indicates the number of objects counted. The number of objects is the same regardless of their arrangement or the order in which they were counted. • **K.CC.B.4.C:** Understand that each successive number name refers to a quantity that is one larger.	• **SMP 2:** Reason abstractly and quantitatively. • **SMP 6:** Attend to precision.
Clarification Statement	**Students Who Demonstrate Understanding Can...**
• Experience with **counting** allows students to discuss and come to understand the second part of the standard that states that the **number** of objects is the **same** regardless of their **arrangement** or the **order** in which they were counted.	• Count objects in a group (each object is counted only once) regardless of arrangement and order. • Determine "how many?" are in a group after counting all the objects. • Indicate, by counting, that the last number called indicates the number of objects. • Count on from a known number (without recounting the whole group) when one more object is added to the group.

DOK	Blooms
2	Apply and Analyze

Grade	*CCSS Domain*	*CCSS Cluster*
K	**Counting and Cardinality**	**Count to tell the number of objects.**

Cluster Standard: K.CC.B.5

Standard	Standards for Mathematical Practice
Count to answer "how many?" questions about as many as 20 things arranged in a line, a rectangular array, or a circle, or as many as 10 things in a scattered configuration; given a number from 1-20, count out that many objects.	• **SMP 7:** Look for and make use of structure. • **SMP 8:** Look for and express regularity in repeated reasoning.
Clarification Statement	Students Who Demonstrate Understanding Can...
Counting objects arranged in a line is easiest; with more practice, students learn to count objects in more difficult arrangements, such as rectangular arrays (they need to ensure they reach every row or column and do not repeat rows or columns); circles (they need to stop just before the object they started with); and scattered configurations (they need to make a single path through all of the objects).	• Count objects up to 20 in a variety of arrangements (transition to dot cards, ten frames, dominos, and other representations). • Tell "how many" objects are in a group in a variety of arrangements. • Show the correct number of objects when I am told a number up to 20. • When told a number, Show the correct number of objects in different arrangements.
DOK	Blooms
2	Apply

Common Misconceptions	
• Not yet understanding one-to-one correspondence. • Believing that the arrangement of a set of objects affects the total count.	• Believing that the tagged count is related to the object rather than its position (e.g., an object is always 4 even when it is first in a line).

Grade	*CCSS Domain*	*CCSS Cluster*
K	**Counting and Cardinality**	**Compare numbers.**

Cluster Standard: K.CC.C.6

Standard	Standards for Mathematical Practice
Identify whether the number of objects in one group is greater than, less than, or equal to the number of objects in another group, e.g., by using matching and counting strategies.	• **SMP 6:** Attend to precision. • **SMP 7:** Look for and make use of structure.
Clarification Statement	Students Who Demonstrate Understanding Can...
Students first learn to match the objects in the two groups to see if there are any extra and then to count the objects in each group and use their knowledge of the count sequence to decide which number is greater than the other (the number farther along in the count sequence).	• Tell which has more by matching or counting the number of objects in both groups. • Tell which has less by matching or counting the number of objects in both groups. • Tell when groups are equal by matching or counting. • Create equal groups in different arrangements.
DOK	Blooms
2	Apply and Analyze

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Grade	*CCSS Domain*	*CCSS Cluster*
K	**Counting and Cardinality**	**Compare numbers.**

Cluster Standard: K.CC.C.7

Standard	Standards for Mathematical Practice
K.CC.C.7: Compare two numbers between 1 and 10 presented as written numerals.	• **SMP 2:** Reason abstractly and quantitatively. • **SMP 6:** Attend to precision.
Clarification Statement	Students Who Demonstrate Understanding Can...
	• Read numerals to 10. • Tell the values of numbers to 10. • Determine if a set is greater or less than another set (up to 10). • Compare two numerals between 1 and 10 and say which has a greater value.
DOK	Blooms
1-2	Remember, Apply, and Analyze

Common Misconceptions

• Lack of one-to-one correspondence. • Believing that the arrangement of a set of objects affects the total count.	• Believing that a longer line of objects automatically contains more objects. • Struggling with the language of comparison.

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Student Discourse Guide	
• **Purposeful, rich classroom discourse offers students the opportunity to express their ideas, thinking, and to critique the reasoning of others in a variety of ways (writing, drawing, verbal). Purposeful implementation of classroom discourse allows students to activate funds of knowledge and to refine their mathematical understanding. When students have frequent opportunities for discourse they find various paths to solutions and reveal knowledge or misunderstandings to educators. The process also allows educators to honor students' culture, lived experiences and evolving math identities.** • **Discourse that focuses on tasks that promote reasoning and problem solving is a primary mechanism for developing conceptual understanding and meaningful learning of mathematics (Michaels, O'Connor, and Resnick, 2008)**	
Domain: **Counting and Cardinality**	Strand: **Know the names and the count sequence**
Suggested Student Discourse Questions	
• What number comes next (1-20)? How do you know? • How can you and your partner take turns counting to 20?	• How does your age follow a number sequence? How do you know how old you'll be on your next birthday? • What are some different ways we can count the students in our classroom?

Domain: **Counting and Cardinality**	Strand: **Compare Numbers**
Suggested Student Discourse Questions	
• What does greater than, less than or equal to mean? • Explain how your partner's number of objects is greater than or less than your number of objects.	• Would you rather have this amount or this one? Ex. Would you rather have 5 cookies or 3 cookies? Why? • How did you use your manipulatives to show the greater number of objects?

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Kindergarten Counting and Cardinality Guide

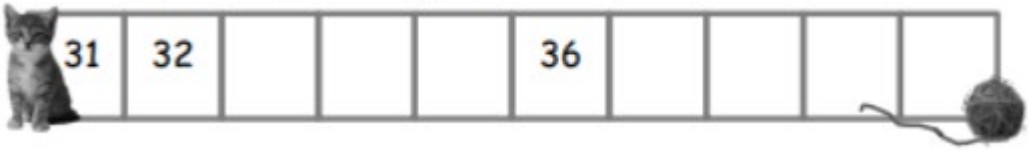
ASSESSMENT GUIDE

- Know number names and the count sequence
- Count to tell the number of objects
- Compare numbers

Grade	*CCSS Domain*	*CCSS Strand*
K	**Counting and Cardinality**	**Know the names and the count sequence.**

Sample Task #1 (Constructed Response)

Count up by 1s. Help the kitty play with her yarn!

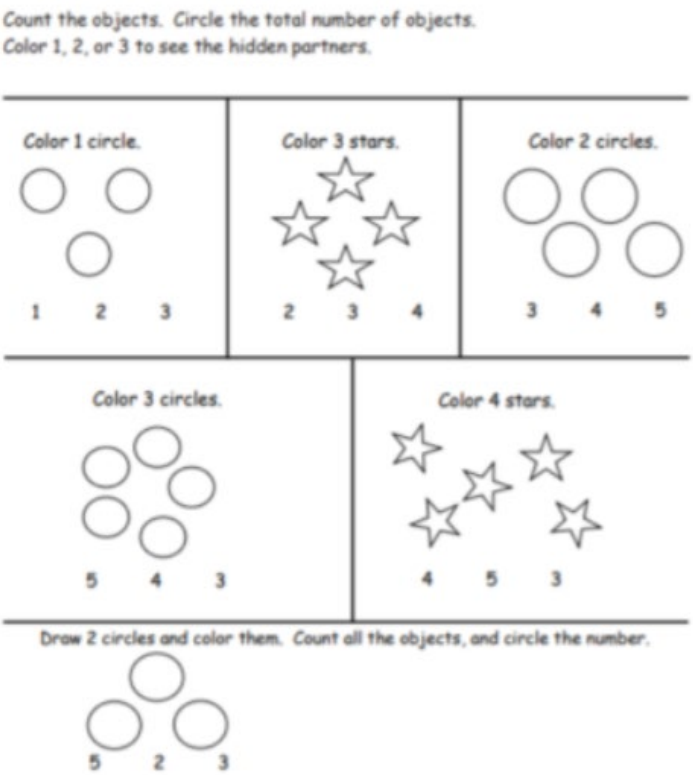


Sample Task #2

Count the number of dots and write the number.

Grade	*CCSS Domain*	*CCSS Strand*
K	**Counting and Cardinality**	**Count to tell the number of objects.**

Sample Task #1 (Constructed Response)



	Sample Task #2 (Multiple Choice)
	Count the number of circles and choose the correct answer.

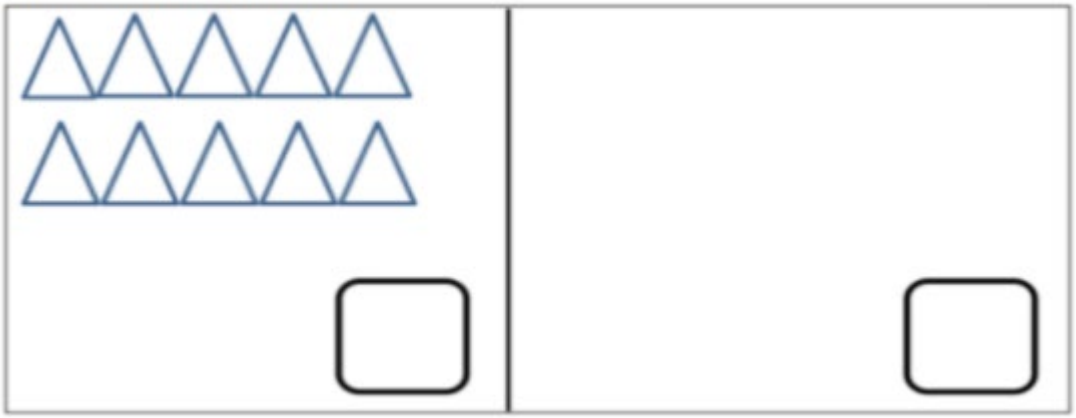
Grade	*CCSS Domain*	*CCSS Strand*
K	**Counting and Cardinality**	**Compare Numbers**

Sample Task #1 (Constructed Response)

Draw a stick **shorter than** my 5-stick.

Draw a stick **longer than** mine.

Draw a stick **shorter than** mine.

	Sample Task #2
	Count and color the triangles. Draw a group of triangles that is 1 less. Write how many you drew. 

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Kindergarten Counting and Cardinality Guide

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MLSS AND CLR GUIDE

- Know number names and the count sequence
- Count to tell the number of objects
- Compare numbers

CCSS Domain	*CCSS Cluster*
Counting and Cardinality	**Know number names and the count sequence**

Culturally and Linguistically Responsive Instruction

Relevance to Families and Communities	During a unit focused on counting, 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, incorporating how mathematical concepts were already being used at home. Then finding ways to incorporate this prior knowledge, such as familiarity with sports, into classroom lessons. Instead of using football merely as the context for a problem, the numbers inherent to football, like series of sevens and threes, could be used.	
Cross-Curricular Connections	Social Studies: In Kindergarten, the New Mexico Social Studies Standards state students should "identify classroom population". Consider providing a connection for students to count the classroom population in ways that change (such as number of students present and number of students absent each day). Morning Meeting (or other morning routine): Consider providing a connection to counting various aspects related to the calendar, including the first 100 days of school.	
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*	• Task: 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 knowing number names and counting in sequence, the types of mathematical tasks are critical because Practices within a culture affect understanding. Some assessment tools may greatly underestimate the knowledge that students possess. Tools that are used

	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?	in students' everyday lives may better capture student understanding. For example, a student who stops by the corner store to buy snacks every day understands place value to some degree but may not be able to show that knowledge using cubes.

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Planning for Multi-Layered System of Supports

Vertical Alignment

Previous Learning	*Current Learning*	*Future Learning*
• Connect to counting by ones to 10 and higher. • Connect to recognizing and naming numerals 1 to 5.	• Connect continuing in the Counting and Cardinality domain to use counting to tell the number of objects. (K.CC.4) • Connect to continuing to work with concepts of number meaning in the domains of Operations and Algebraic Thinking, as well as Number and Operations in Base Ten.	• Connect to extending the counting sequence, number recognition and writing to 120. (1.NBT.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 introduces new representations when studying knowing the number names and the count sequence because students will need support when learning numbers and number sequences. Visual aids that give support create confidence and will stimulate thinking and improve the learning environment in a classroom.
Intensive	*What critical understandings will prepare students to access the mathematics for this cluster?*	Indicator 9.3 of the “New Mexico Early Learning Guidelines, Essential Indicator” will provide some knowledge that is required. This standard provides a foundation for work with numbers and ways of representing numbers because numbers represent quantity or "how many?". Students who develop number sense understand the order in math. They see the relationships that numbers have to one another; they understand how numbers are put together and taken apart; and they have an intuitive sense about our

		number system. 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***

• Sequence can be used to know which decade is next in the counting sequence.
• Understand that a number can represent a group of objects.
	• Rote count to 100 by ones and tens.
	• Rote count forward by ones beginning at any given number within 100.
	• Rote count backwards by ones from any given number within 20.
	• Recognize and write numbers from 0-20.
		• Build on students' experience with the following skills:
		  ○ Represent individual digits with objects.
		  ○ Give students multiple opportunities to practice sequencing.
		
		• 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:
		  ○ Digital or hands on manipulatives: two colored counters, linking cubes, base ten blocks, bears, ten frame counters, beans, straws, subitizing cards, beads, etc...
		  ○ Digital resources from math programs or online resources for counting practice.

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	Students may benefit from re-engaging with content during a unit on addition and subtraction by revisiting student thinking through a short mini-lesson because students should have a good understanding of number

	be revisited during a unit?	names and count sequence.
Intensive	What assessment data will help identify content needing to be revisited for intensive interventions?	Some students may benefit from intensive extra time during and after a unit counting to quantity by offering opportunities to understand and explore different strategies because it is important for students to have lots of opportunities to practice counting and hearing others count in order to develop fluency with place value patterns and allows students to become familiar with patterns through counting.

Extension	
Essential Question	***Examples***
What type of extension will offer additional challenges to 'broaden' your student's knowledge of the mathematics developed within your HQIM?	Some learners may benefit from an extension such as the opportunity to explore links between various topics when studying knowing the number names and the count sequence because cross-curricular teaching, or instruction that intentionally applies multiple academic disciplines simultaneously, is an effective way to teach students transferable problem-solving skills, give real-world meaning to school assignments, and increase engagement and rigor.

CCSS Domain	*CCSS Cluster*
Counting and Cardinality	**Count to tell the number of objects**

Culturally and Linguistically Responsive Instruction

Relevance to Families and Communities	During a unit focused on counting objects, 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. Families may find value in teaching students about counting activities in their everyday activities and filming them to share with the class. Students and families can share the names for numbers in their heritage language and activate connections between the learning in the classroom and learning in their culture.	
Cross-Curricular Connections	Science: In Kindergarten, the NGSS states students should "use and share observations of local weather conditions to describe patterns over time." Consider providing opportunities for students to track on a calendar and then count the number of cloudy, sunny or rainy days. Language Arts: Literature can offer connections about measurement such as: *Ten Black Dots* by Donald Crews and *The Very Hungry Caterpillar* by Eric Carle.	
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*	• Goal Setting: Setting challenging but attainable goals with students can communicate the belief and expectation that all students can engage with interesting and rigorous mathematical content and achieve in mathematics. Unfortunately, the reverse is also true, when students encounter low expectations through their interactions with adults and the media, they may see little reason to persist in mathematics, which can create a vicious cycle of low expectations and low achievement. For example, when studying counting objects, goal setting is critical because students come to Kindergarten with a variety of early experiences and different developmental levels and rate of learning differs depending on the needs of individual students. When students know the expectations and can establish goals as targets there is a development of intrinsic motivation that encourages student progress in the development of the skill.

	identities as capable mathematicians that can use mathematics within school and society?	

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Planning for Multi-Layered System of Supports

Vertical Alignment

Previous Learning	*Current Learning*	*Future Learning*
• Connect to counting the number of items in a group of up to 10 objects and knowing that the last number tells how many. • Connect to giving up to 5 items when requested.	• Connect to continuing to work with concepts of number meaning in the domains of Order and Algebraic Thinking, as well as Number and Operations in Base Ten. • Connect to comparing the size of sets to answer greater than, less than, or the same, including written numerals. (K.CC.6, 7)	• Connect to extending the counting sequence, number recognition and writing to 120. (1.NBT.1) • Connect to counting strategies to add and subtract within 20. (1.OA.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 new mathematical language when studying counting objects because not all students will make the connection between rote counting, numbers, and quantity/one-to-one correspondence.
Intensive	*What critical understandings will prepare students to access the mathematics for this cluster?*	New Mexico Early Learning Guidelines, Essential Indicator 9.1, 9.3 a-b, and 12.1 and K.CC.A.12: These standards provide a foundation for work with counting objects because students need a foundational understanding of numbers and counting/labeling quantities prior to counting objects at higher quantities. 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 last number called represents the total number of objects in the group.
• The number of objects in a group does not change when objects are moved or rearranged.
• Each number said, in sequence, represents a quantity that is one more than the previous number.
	• Say the number name in consecutive order as they point to each object when they count.
	• Count objects from 1-20 in various arrangements and recall the number when asked "how many".
	• Count out a set of objects when given a number from 1-20 (without exceeding the given number).
		• Build on students' experience with the following skills:
		  ○ Represent groups of objects as a whole.
		  ○ Give students multiple opportunities to practice sequencing from any given number within 1-20.
		
		• 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:
		  ○ Digital or hands on manipulatives: two colored counters, linking cubes, base ten blocks, bears, ten frame counters, beans, straws, subitizing cards, beads, etc...
		  ○ Digital resources from math programs or online resources for counting practice.

Re-Teach		
Level of Intensity	***Essential Question***	***Examples***
Targeted	What formative assessment data (e.g., tasks, exit tickets, observations) will help	Examine assessments for evidence of lingering misconceptions (see common misconceptions). If students exhibit one more of these misconceptions,

	identify content needing to be revisited during a unit?	consider addressing the misconception. For example, students may benefit from re-engaging with content during a unit on counting objects by critiquing student approaches/solutions to make connection through a short mini-lesson because not all students have the functional ability and experience to develop a strategy or the perseverance to try until they develop a strategy that will encourage their success in the long term (e.g., counting 2 items is not likely to need more than one-to-one-correspondence, however, 20 items may require grouping, moving, recall, and memory to sustain the task to completion and success).
Intensive	What assessment data will help identify content needing to be revisited for intensive interventions?	Some students may benefit from intensive extra time during and after a unit counting objects by offering opportunities to understand and explore different strategies because not all students have the functional ability and experience to develop a strategy or the perseverance to try until they develop a strategy that will encourage their success in the long term (e.g., counting 2 items is not likely to need more than one-to-one-correspondence, however, 20 items may require grouping, moving, recall, and memory to sustain the task to completion and success).

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?	To extend students learning about counting objects, some learners may benefit from an extension such as the opportunity to explore links between various topics when studying counting objects because standard K.CC.C.6 asks students to Identify whether the number of objects in one group is greater than, less than, or equal to the number of objects in another group, (e.g., by using matching and counting strategies) is taught in tandem and allows for the natural extension and linking of concepts around grouping and sorting objects.

New Mexico Instructional Scope

Kindergarten Counting and Cardinality Guide

CCSS Domain	*CCSS Cluster*
Counting and Cardinality	**Compare numbers**

Culturally and Linguistically Responsive Instruction

Relevance to Families and Communities	During a unit focused on comparing numbers, 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, learning about relevance of numbers and the value associated with numbers in the culture of the student/family may provide relevance for the student in learning this skill.	
Cross-Curricular Connections	Social Studies: In Kindergarten, the New Mexico Social Studies Standards state students should "identify classroom population". Consider providing a connection for students to count the classroom population in ways that change (such as number of students present and number of students absent each day) and then compare those numbers. Language Arts: Literature can offer connections about measurement such as: *More or Less?* by Stuart J. Murphy and *Albert Keeps Score* by Daphne Skinner.	
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*	• **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 comparing numbers the types of mathematical tasks are critical because students may benefit from a routine and ritual practice and process to develop their comparison skills and build fluency to compare a variety of numbers.

	identities as capable mathematicians that can use mathematics within school and society?	

Planning for Multi-Layered System of Supports

Vertical Alignment

Previous Learning	***Current Learning***	***Future Learning***
• Connect to recognizing and naming numerals 1 to 5. • Connect to comparing two groups (containing up to 5 objects each) and describing them using comparative words, such as, less, fewer, or equal. • Connect to looking at a group of up to 4 objects and quickly seeing and saying the number of objects.	• Connect to continuing in the Counting and Cardinality domain to use counting to tell the number of objects. **(K.CC.4-5)** • Connect to classifying objects and counting the number of objects in each category. **(K.MD.3)**	• Connect to comparing two two-digit numbers based on meanings of the tens and ones digits, recording the results of comparisons with the symbols >, = and <. **(1.NBT.3)** • Connect to organizing, representing, and interpreting data with up to three categories; asking and answering questions about the total number of data points, how many in each category, and how many more or less are in one category than in another. **(1.MD.4)**

Suggested Instructional Strategies

Pre-Teach

Level of Intensity	***Essential Question***	***Examples***
Targeted	*What pre-teaching will prepare students to productively struggle with the mathematics for this*	For example, some learners may benefit from targeted pre-teaching that introduces new representations (e.g., number lines) when studying comparing numbers because experience and exposure to numbers and the

	cluster within your HQIM?	concepts required for a comparison may not be familiar and may require tools and new vocabulary for students to access the content required to learn and demonstrate knowledge of the standard.
Intensive	*What critical understandings will prepare students to access the mathematics for this cluster?*	What critical understandings will prepare students to access the mathematics for this cluster? New Mexico Early Learning Guidelines, Essential Indicator 9.1, 9.3 a-b, and 12.1 and K.CC.A.12: This standard provides a foundation for working with comparing numbers because students must have a foundation in numbers to engage in comparison taxonomy. 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***

• Vocabulary of greater than (more than), less than (fewer than), and equal (same as).
• The connection between comparing two concrete quantities and comparing two numerals.
	• Compare two groups of up to 10 objects and determine if there are more than, less than or an equal amount of objects.
	• Compare two numbers between 1 and 10 presented as written numerals.
	• Label a group of objects with the appropriate numeral.
		• Build on students' experience with the following skills:
		  ○ Use groups of objects to show more, less, or equal numbers.
		  ○ Use counting to tell if a number is greater than, less than, or equal to.
		  ○ Have students create groups of objects independently to show more, less, or equal to, compared to another group of objects.
		  ○ Using a group of objects to show students how to find the appropriate numeral to label the amount of objects in the group.
		
		• 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: ○ Digital or hands on manipulatives: two colored counters, linking cubes, base ten blocks, bears, ten frame counters, beans, straws, subitizing cards, beads, etc... ○ Digital resources from math programs or online resources for counting and comparing practice.

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?	Examine assessments for evidence of lingering misconceptions (see common misconceptions). If students exhibit one more of these misconceptions, consider addressing the misconception by having students re-engage with content during a unit on comparing numbers by clarifying mathematical ideas and/or concepts through a short mini-lesson because differences in language acquisition, exposure to vocabulary and higher-level taxonomy may not be areas of strength or familiarity for young students.
Intensive	What assessment data will help identify content needing to be revisited for intensive interventions?	Examine assessments for evidence of students still developing the underlying ideas. For example, some students may benefit from intensive extra time during and after a unit comparing numbers by addressing conceptual understanding because comparison requires a level of understanding of numbers that some students may need more time to develop and may need support to begin to understand.

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?	To extend students learning, for example, some learners may benefit from an extension such as in-depth, self-directed exploration of self-selected topics when studying comparing numbers because students come to kindergarten with varying levels of experience and understanding of numbers and should be encouraged to explore numbers of higher value or develop deeper comparisons of numbers based on their developmental levels.

New Mexico Instructional S
Kindergarten Geometry G

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

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

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

New Mexico Instructional S
Kindergarten Geometry Gu

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

- Identify and describe shapes.
  - K.G.A.1
  - K.G.A.2
  - K.G.A.3
- Analyze, compare, create, and compose shapes.
  - K.G.B.4
  - K.G.B.5
  - K.G.B.6

Grade	*CCSS Domain*	*CCSS Cluster*
K	**Geometry**	**Identify and create shapes.**

Cluster Standard: K.G.A.1

Standard	Standards for Mathematical Practice
Describe objects in the environment using names of shapes, and describe the relative positions of these objects using terms such as *above, below, beside, in front of, behind,* and *next to*.	• **SMP 4:** Model with mathematics. • **SMP 6:** Attend to precision.
Clarification Statement	**Students Who Demonstrate Understanding Can...**
• Students refine their informal language by learning mathematical concepts and vocabulary so as to increasingly describe their physical world from geometric perspectives, e.g., **shape**, **orientation**, **spatial relations** (MP4). They increase their knowledge of a variety of shapes, including **circles**, **triangles**, **squares**, **rectangles**, and special cases of other shapes such as **regular hexagons**, and **trapezoids** with **unequal base**s and **non-parallel sides** of **equal length**. Students also begin to name and describe **three-dimensional shapes** with mathematical vocabulary, such as "**sphere**," "**cube**," "**cylinder**," and "**cone**." Finally, in the domain of **spatial reasoning**, students discuss not only shape and orientation, but also the **relative positions** of objects, using terms such as "**above**," "**below**," "**next to**," "**behind**," "**in front of**," and "**beside**."	• Describe the position of objects as above, below, beside, in front of, and next to. • Identify shapes in my environment regardless of their orientation or overall size (squares, circles, triangles, rectangles, hexagons, cubes, cones, cylinders, and spheres).
DOK	**Blooms**
1-2	Remember and Analyze

Grade	CCSS Domain	CCSS Cluster
K	Geometry	Identify and create shapes.

Cluster Standard: K.G.A.2

Standard	Standards for Mathematical Practice
Correctly name shapes regardless of their orientations or overall size.	• **SMP 6:** Attend to precision. • **SMP 7:** Look for and make use of structure.
Clarification Statement	**Students Who Demonstrate Understanding Can...**
• Students learn to name shapes such as circles, triangles, and squares, whose names occur in everyday language, and distinguish them from **nonexamples** of these **categories**, often based initially on visual prototypes.	• Identify shapes regardless of their orientation or overall size (squares, circles, triangles, rectangles, hexagons, cubes, cones, cylinders, and spheres). • Identify shapes correctly even when their size and orientation is unusual or different.
DOK	**Blooms**
1	Remember

Grade	CCSS Domain	CCSS Cluster
K	Geometry	Identify and create shapes.

Cluster Standard: K.G.A.3

Standard	Standards for Mathematical Practice
Identify shapes as two-dimensional (lying in a plane, "flat") or three-dimensional ("solid").	• **SMP 3:** Construct viable arguments and critique the reasoning of others. • **SMP 6**: Attend to precision.

	• **SMP 7:** Look for and make use of structure.
Clarification Statement	**Students Who Demonstrate Understanding Can...**
• In the domain of shape, students learn to match t**wo-dimensional shapes** even when the shapes have different orientations. The need to explain their decisions about shape names or classifications prompts students to attend to and describe certain features of the shapes. That is, concept images and names they have learned for the shapes are the raw material from which they can abstract common features. They identify **faces** of three-dimensional shapes as two-dimensional **geometric figures** and explicitly identify shapes as two-dimensional ("**flat"** or lying in a **plane**) or three-dimensional ("**solid**").	• Define two-dimensional as being flat. • Define three-dimensional as being solid. • Identify two-dimensional shapes. • Identify three-dimensional shapes.
DOK	**Blooms**
1	Remember

Common Misconceptions

• Using informal names for shapes. • Incorrectly identifying figures that visually "resemble" shapes but don't possess all the needed attributes as that shape (such as an upside-down heart as a triangle).	• Not recognizing inverted or upside-down shapes as being that shape (especially upside-down triangles). • Mixing up the terminology for two- and three-dimensional shapes (such as calling a cube a square).

New Mexico Instructional S
Kindergarten Geometry Gu

Grade	CCSS Domain	CCSS Cluster
K	Geometry	Analyze, compare, create, and compose sha

Cluster Standard: K.G.B.4

Standard	Standards for Mathematical Practice
Analyze and compare two- and three-dimensional shapes, in different sizes and orientations, using informal language to describe their similarities, differences, parts (e.g., number of sides and vertices/"corners") and other attributes (e.g., having sides of equal length).	• **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...**
	• Describe a shape by telling things like the number of sides, number of vertices (corners), and other special qualities. • Describe two-dimensional shapes (circles, triangles, rectangles, and squares) by the number of sides and corners. • Compare two-dimensional shapes and describe their similarities and differences. • Compare three-dimensional shapes and describe their similarities and differences.
DOK	**Blooms**
1-2	Understand and Analyze

Grade	CCSS Domain	CCSS Cluster
K	Geometry	Analyze, compare, create, and compose sha

Cluster Standard: K.G.B.5

Standard	Standards for Mathematical Practice
Model shapes in the world by building shapes from components (e.g., sticks and clay balls) and drawing shapes.	• **SMP 4:** Model with mathematics. • **SMP 7:** Look for and make use of structure.
Clarification Statement	**Students Who Demonstrate Understanding Can...**
	• Build shapes from materials in their environment. • Draw shapes in their environment.
DOK	**Blooms**
2-3	Analyze and Create

Grade	CCSS Domain	CCSS Cluster
K	Geometry	Analyze, compare, create, and compose sha

Cluster Standard: K.G.B.6

Standard	Standards for Mathematical Practice
Compose simple shapes to form larger shapes. *For example, "Can you join these two triangles with full sides touching to make a rectangle?"*	• **SMP 1:** Make sense of problems and persevere in solving them. • **SMP 6:** Attend to precision.
Clarification Statement	**Students Who Demonstrate Understanding Can...**

	• Put shapes together to make new shapes (compose shapes). • Name the new shape that results from composing two simple shapes. • Decide which piece will fit into a space in a puzzle.
DOK	**Blooms**
2-3	Analyze and Create

Common Misconceptions

• Not realizing that triangles can be inverted or rotated. • Not considering the properties of two-dimensional shapes (such as identifying all quadrilaterals as rectangles).	• Mixing up the terminology for two- and three-dimensional shapes (such as calling a cube a square). • Not being able to see shapes from different perspectives and struggling to “move” shapes through slides, flips and turns.

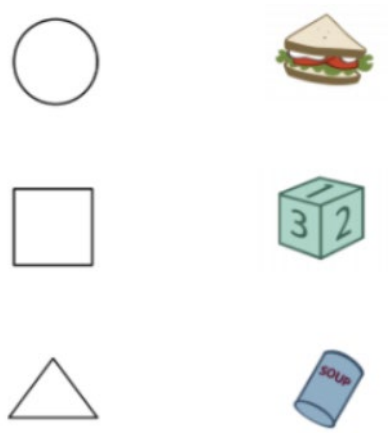
ASSESSMENT GUIDE

- Identify and describe shapes.
- Analyze, compare, create, and compose shapes.

Grade	*CCSS Domain*	*CCSS Strand*
K	Geometry	Identify and describe shapes.

Sample Task #1 (Constructed Response)

Draw a line from the flat shape to the object that has a face with that flat shape.



Sample Task #2

Find things in your house of in a magazine that look like the solid pictured here.
Draw the solids or cut out and paste the pictures from the magazine.

Grade	CCSS Domain	CCSS Strand
K	Geometry	Analyze, compare, create, and compose sh

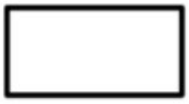
Sample Task #1 (Constructed Response)

Carlos drew 2 lines on his square. You can see his square before he cut it. Circle the shapes Carlos had after he cut.

India drew 2 lines on her rectangle. You can see her rectangle before she cut it. Circle the shapes India had after she cut.

Sample Task #2

Draw 2 shapes that can be used to build the rectangle.



Draw 2 shapes that can be used to build the house.

MLSS AND CLR GUIDE

- Identify and describe shapes
- Analyze, compare, create, and compose shapes

CCSS Domain	*CCSS Cluster*
Geometry	Identify and describe shapes

Culturally and Linguistically Responsive Instruction

Relevance to Families and Communities	During a unit focused on identifying and describing shapes, 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 the different names for shapes in other languages could bring interest and awareness to student cultures and families.	
Cross-Curricular Connections	Science: In Kindergarten, the NGSS state students should "develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem." Consider providing a connection for students to identify the shapes of the objects and whether they are two- or three-dimensional. Language Arts: Literature can offer connections about shapes such as: *Shape by Shape* by Suze MacDonald and *Perfect Square* by Michael Hall.	
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*	• 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 Identifying and describing shapes, the types of mathematical tasks are critical because although rote practice increases fluency it usually does not engage children for long because they are based on students' recall or memorization of facts. When students are placed in situations in which recall speed determines success, they may infer that being

	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?	"smart" in mathematics means getting the correct answer quickly instead of valuing the process of thinking.

Planning for Multilayered System of Supports

Vertical Alignment

Previous Learning	***Current Learning***	***Future Learning***
• Connect to recognizing circle, triangle, and rectangle which includes squares. • Connect to recognizing that a shape remains the same shape when it changes position. • Connect to demonstrating and beginning to use the language of the relative position of objects in the environment and play situations, such as up, down, over, under, top, bottom, inside, outside, in front, behind, between, next to. • Connect to comparing length and other attributes of objects, using the terms bigger, longer, and taller. • Connect to arranging objects in order according to characteristics or attributes, such as height.	• Connect to sorting by attributes to investigate measurement and data. **(K.MD.1-3)**	• Connect to reason with shapes and their defining attributes. **(1.G.1)** • Connect to identification of additional shapes (trapezoids, half-circles, quarter-circles) and combining three-dimensional shapes to create larger shapes. **(1.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 shapes (describing/identifying) because this is the first time that they have seen the shape or the concept of a shape. A visual representation is the best option.
Intensive	*What critical understandings will prepare students to access the mathematics for this cluster?*	Identify and Describe Shapes (Squares, Circles, Triangles, Rectangles, Hexagons, Cubes, Cones, Cylinders, And Spheres). This standard provides a foundation for work with shapes (identifying and describing because it is the starting point for shapes. 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?	Examine assessments for evidence of lingering misconceptions (see common misconceptions). If students exhibit one more of these misconceptions, consider addressing the misconception by …For example, students may benefit from re-engaging with content during a unit on shapes (identifying and describing) by providing specific feedback to students on their work through a short mini-lesson because seeing mistakes or good work will help the student analyze their thinking.
Intensive	What assessment data will help identify content needing to be revisited for intensive interventions?	Examine assessments for evidence of students still developing the underlying ideas For example, some students may benefit from intensive extra time during and after a unit Identify And Describe Shapes by <helping students move from specific answers to generalizations for certain types of problems because <students will begin to understand about the attributes that makes a shape as a general, for example what makes a rectangle a rectangle, or a triangle a triangle.

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?	To extend students' learning about, for example, some learners may benefit from an extension such as the application of and development of abstract thinking skills when studying shapes (describing and identifying) because they might need deeper thinking in order to better understand the topic.

CCSS Domain	*CCSS Cluster*
Geometry	Analyze, compare, create, and compose shapes

Culturally and Linguistically Responsive Instruction

Relevance to Families and Communities	During a unit focused on analyzing, comparing, creating, and composing shapes, 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, by asking the students or send a letter home to ask parents to talk about students on how shapes (analyzing, comparing, creating, and composing) are utilized in their work or around the house/family life.	
Cross-Curricular Connections	Social Studies: Students should "recognize and name symbols and activities of the United States, New Mexico, and tribes." Consider providing a connection for students to model these symbols and pictures related to the activities in terms of shapes. Language Arts: Literature can offer connections about composing and decomposing shapes such as: *Changes, Changes* by Pat Hutchins.	
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*	• 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 leads to more students viewing themselves mathematically successful capable mathematicians than tasks and instruction which define success as memorizing and repeating a procedure demonstrated by the teacher. For example, when studying shapes (analyzing, comparing, creating, and composing shapes) the types of mathematical tasks are critical because tasks

	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?	should have many entry points, and should be open ended so our students can and will make sense of the problems according to the background knowledge they bring. Tasks should be wide, then slowly tasks should start getting narrow into what the goal of the cluster is. In other words, refining the learning so our students can meet the cluster.

Planning for Multilayered System of Supports

Vertical Alignment

Previous Learning	***Current Learning***	***Future Learning***
• Connect to building and describing two-dimensional shapes, such as making circles and triangles with blocks and play dough. • Connect to sorting and matching objects with the same shape and size, and lay an object of the same shape and size on top of another to show they are the same. • Connect to making a picture by combining shapes. • Connect to comparing length and other attributes of objects, using the terms bigger, longer, and taller. • Connect to arranging objects in order according to characteristics or attributes, such as height.	• Connect to building upon students' knowledge of identifying and describing shapes. **(K.G.1-3)** • Connect to students using their knowledge of sorting by attributes to investigate measurement and data. **(K.MD.1-3)**	• Connect to reason with shapes and their defining attributes. **(1.G.1)** • Connect to identification of additional shapes (trapezoids, half-circles, quarter-circles) and combining three-dimensional shapes to create larger shapes. **(1.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 to analyze, compare, create, and compose shapes because the students were previously taught the names and some attributes of the different 2-dimensional as well as 3-dimensional shapes, for example if the window and the door are compared students can see that both are rectangles but one is bigger than the other.
Intensive	*What critical understandings will prepare students to access the mathematics for this cluster?*	These standards provide a foundation for work with the analyzing, comparing, creating, and the composition of shapes because students need to be able to identify and describe the shapes in order for them to analyze, compare, create, and/or compose shapes. 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?	Examine assessments for evidence of lingering misconceptions (see common misconceptions). If students exhibit one more of these misconceptions, consider addressing the misconception by: For example, students may benefit from re-engaging with content during a unit on analyzing, comparing, creating, and composing shapes by clarifying mathematical ideas and/or concepts through a short mini-lesson because if students are struggling with the names, and their attributes they will also struggle when they are required to analyze and compare shapes.
Intensive	What assessment data will help identify content needing to be revisited for intensive interventions?	Examine assessments for evidence of students still developing the underlying ideas For example, some students may benefit from intensive extra time during and after a unit analyzing, comparing, creating, and composing shapes by offering opportunities to understand and explore different strategies because by using different strategies the students might get to the

		conceptual understanding for example by overlapping some shapes and finding how they are different the students might start to see the attributes of the different shapes.

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?	To extend students' learning about analyzing, comparing, creating, and composing shapes, some learners may benefit from an extension such as the application of and development of abstract thinking skills when studying analyze, compare, create, and compose shapes because by asking questions like what would you need to do to this square to make it a rectangle, and or can you decompose a shape into different shapes?

New Mexico Instructional S

Kindergarten Measurement and Data

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New Mexico Instructional S

Kindergarten Measurement and Data

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	Procedural Skill and Fluency	Procedural standards help students develop **efficiency** and **accuracy** in computations.

Standards Breakdown

- Describe and compare measurable attributes.
  - K.MD.A.1
  - K.MD.A.2
- Classify objects and count the number of objects in each category.
  - K.MD.B.3

Grade	CCSS Domain	CCSS Cluster
K	Measurement and Data	Describe and compare measurable attribute

Cluster Standard: K.MD.A.1

Standard	Standards for Mathematical Practice
Describe measurable attributes of objects, such as length or weight. Describe several measurable attributes of a single object.	• **SMP 3:** Construct viable arguments and critique the reasoning of others. • **SMP 6:** Attend to precision. • **SMP 7:** Look for and make use of structure.

Clarification Statement	Students Who Demonstrate Understanding Can...
• Students often initially hold undifferentiated views of measurable attributes, saying that one object is "bigger" than another whether it is longer, or greater in area, or greater in volume, and so forth. For example, two students might both claim their block building is "the biggest." Conversations about how they are comparing—one building may be taller (greater in length) and another may have a larger base (greater in area)—help students learn to discriminate and name these measurable attributes. As they discuss these situations and compare objects using different attributes, they learn to distinguish, label, and describe several measurable attributes of a single object.	• Describe measurable attributes of objects, including length, weight, and size. • Recognize that a single object has more than one measurable attribute.

DOK	Blooms
2	Remember and understand

Grade	CCSS Domain	CCSS Cluster
K	Measurement and Data	Describe and compare measurable attribute

Cluster Standard: K.MD.A.2

Standard	Standards for Mathematical Practice
Directly compare two objects with a measurable attribute in common, to see which object has "more of"/"less of" the attribute, and describe the difference. *For example, directly compare the heights of two children and describe one child as taller/shorter.*	• **SMP 3:** Construct viable arguments and critique the reasoning of others. • **SMP 6:** Attend to precision.
Clarification Statement	**Students Who Demonstrate Understanding Can...**
• Kindergartners easily directly compare lengths in simple situations, such as comparing people's heights, because standing next to each other automatically aligns one endpoint. However, in other situations they may initially compare only one endpoint of objects to say which is longer. Discussing such situations (e.g., when a child claims that he is "tallest" because he is standing on a chair) can help students resolve and coordinate perceptual and conceptual information when it conflicts.	• Compare two objects directly by placing them next to one another to determine which is longer or bigger. • Compare two objects directly by holding one in each hand to determine which is heavier. • Describe which of two objects has more or less of an attribute using vocabulary such as taller, longer, shorter, heavier and lighter
DOK	**Blooms**
2-3	Understand, Apply, and Analyze

Grade	CCSS Domain	CCSS Cluster
K	Measurement and Data	Classify objects and count the objects in each c

Cluster Standard: K.MD.B.3

Standard	Standards for Mathematical Practice
Classify objects into given categories; count the numbers of objects in each category and sort the categories by count.	• **SMP 2:** Reason abstractly and quantitatively. • **SMP 6:** Attend to precision.
Clarification Statement	**Students Who Demonstrate Understanding Can...**
• Students in Kindergarten classify objects into categories, initially specified by the teacher and perhaps eventually elicited from students. For example, in a science context, the teacher might ask students in the class to sort pictures of various organisms into two piles: organisms with wings and those without wings. Students can then count the number of specimens in each pile. Students can use these category counts and their understanding of cardinality to say whether there are more specimens with wings or without wings.	• Identify similarities and differences between objects (e.g., size, color, shape). • Use identified attributes to sort a collection of objects. • Count the number of objects in each collection. • Group the collections by the amount in each one.
DOK	**Blooms**
1-2	Remember, Apply, and Analyze

Common Misconceptions

• Not yet counting each object in a set once, and only once with one touch per object (one-to-one correspondence).	• Not yet realizing that objects can be sorted into multiple categories.

ASSESSMENT GUIDE

- Describe and compare measurable attributes
- Classify objects and count the number of objects in each category

Grade	CCSS Domain	CCSS Strand
K	Measurement and Data	Describe and compare measurable attribu

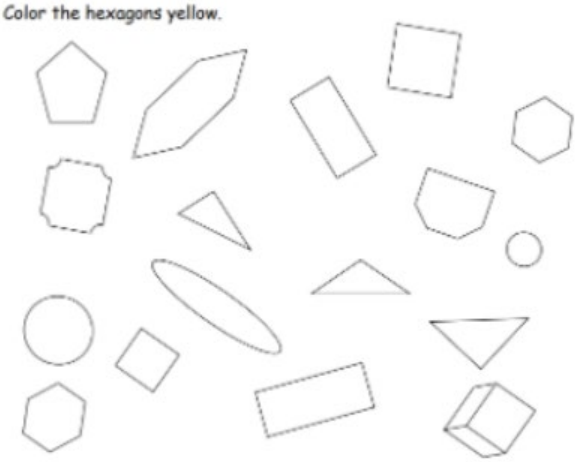
Sample Task #1 (Constructed Response)

Color the triangles blue.

Color the rectangles red.

Color the circles green.

Color the hexagons yellow.

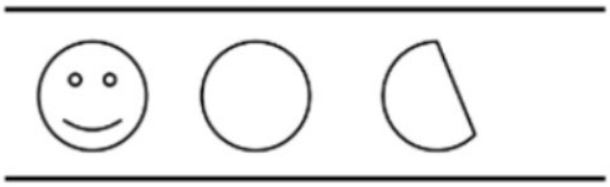


On the back of your paper, draw 2 triangles and 1 hexagon.

How many shapes did you draw? _____

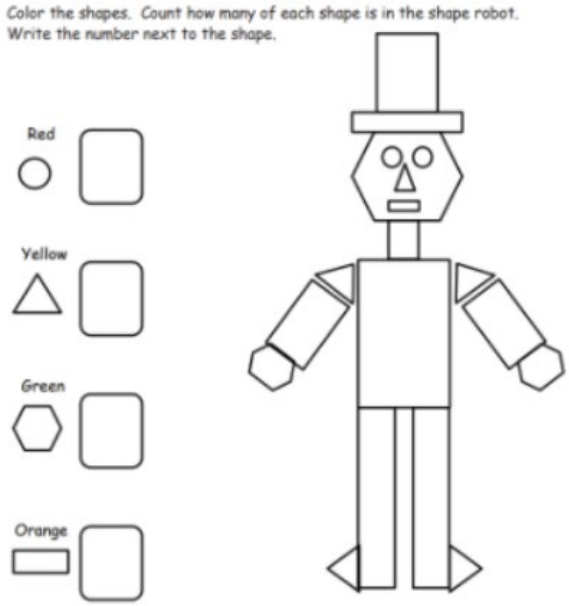
Sample Task #2

In each row, circle the one that doesn't belong. Explain your choice to a grown-up.

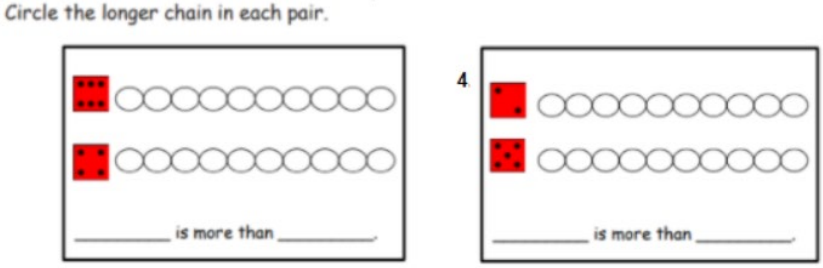


Grade	CCSS Domain	CCSS Strand
K	Measurement and Data	Classify objects and count the number of obj each category

Sample Task #1 (Constructed Response)



Sample Task #2 (Multiple Choice)



MLSS AND CLR GUIDE

- Describe and compare measurable attributes
- Classify objects and count the number of objects in each category

CCSS Domain	*CCSS Cluster*
Measurement and Data	Describe and compare measurable attributes

Culturally and Linguistically Responsive Instruction

Relevance to Families and Communities	During a unit focused on describing and comparing measurable attributes, 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 go on a shape hunt and draw 4 shapes they found at home and orally tell the parents which shapes they found and this interaction will lead to finding more shapes at home in their backyard etc. which in turn will help all students with the language aspect of the shapes but also with their own home language because this activity can be done in any language.	
Cross-Curricular Connections	Science: In Kindergarten, the NGSS states students should "make observations (firsthand or from media) to collect data that can be used to make comparisons." Consider providing a connection for students to make direct comparisons based on length, width or size. Language Arts: Literature can offer connections about measurement such as: *The Giant Carrot* by Jan Peck and *Size* by Henry Pluckrose.	
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 describing and comparing measurable attributes, the types of mathematical tasks are critical because students will have a different understanding of what attributes the teacher is referring to. The vocabulary will be a major key component and modeling will also be crucial for students at this level since they all come with

	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?	different levels of mathematics. Language could also be a factor to consider, so lots of pictures and actual objects will enhance and will aid in students moving in the learning of the math continuum.

Planning for Multilayered System of Supports

Vertical Alignment

Previous Learning	*Current Learning*	*Future Learning*
• Connect to comparing length and other attributes of objects, using the terms bigger, longer, and taller. • Connect to comparing two objects by placing one on top of another and indicating which objects take up more space. • Connect to arranging objects in order according to characteristics or attributes, such as height.	• Connect to classifying objects into given categories; count the numbers of objects in each category and sort the categories by count **(K.MD.3)** • Connect to analyzing, describing, and comparing shapes to investigate measurable attributes **(K.G).**	• Connect to ordering three objects by length; comparing the lengths of two objects indirectly by using a third object **(1.MD.A.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 uses images/resources (especially those being used the first time) when studying to describe and compare measurable attributes because students at this level need manipulatives and actual objects to explore and use for comparing measurable attributes of objects. Students need to hold and feel the

		objects. The exposure to objects being used in a lesson will benefit students when describing and comparing measurable attributes. These students will have a chance at feeling the mass of the objects, seeing which ones are shorter and longer, which objects are lighter and which ones are heavier. This will also influence their learning of vocabulary words since the teacher will be sort of front-loading for the actual lesson.
Intensive	*What critical understandings will prepare students to access the mathematics for this cluster?*	Indicator 11.3 of the "New Mexico Early Learning Guidelines, Essential Indicator:" Demonstrates emerging knowledge of measurement: This standard provides a foundation for work with describing and comparing measurable attributes because the student demonstrates an understanding of non-standard units to measure and make comparisons. It is important for students to have the foundation for measurement so they can move on in their learning continuum to describe the comparison of objects and their measurable attributes. 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?	Examine assessments for evidence of lingering misconceptions (see common misconceptions). If students exhibit one more of these misconceptions, consider addressing the misconception by, for example, students may benefit from re-engaging with content during a unit on describe and compare measurable attributes by providing specific feedback to students on their work through a short mini-lesson because students at this level will have to work in partners or individually on a white board show their work, the teacher can quickly scan the room and see misunderstanding. Teachers can quickly have the child orally explain how they organize and compare the object's attributes. The child's thinking process might be exposed when explaining and the teacher will be able to help the child on the spot or in a small group. Targeted re-engagement can support students as they internalize the content while still maintaining the flow of the unit because they

		might be missing just a little piece, there must be a misunderstanding but if the rest of the students in the small group start questioning and the teacher providing assistance by providing sentence frames for the students to use this will feel less intrusive.
Intensive	What assessment data will help identify content needing to be revisited for intensive interventions?	Examine assessments for evidence of students still developing the underlying ideas for example, some students may benefit from intensive extra time during and after a unit Describe and Compare measurable attributes by confronting student misconceptions because five-year old children have misconceptions of measurement, they see things as smaller and bigger. This is a hard concept to learn for the little ones. Therefore, students will need lots of hands-on activities and experiences with measurement: weight, length and volume to begin to understand measuring.

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?	To extend students learning about describing and comparing measurable attributes, some learners may benefit from an extension such as the opportunity to explore links between various topics when studying to describe and compare measurable attributes because students will have the opportunity to explore other objects that they can measure specially the object permanence is hard for students to understand. Exploration time with liquids and different size flasks to pour in.

CCSS Domain	*CCSS Cluster*
Measurement and Data	Classify objects and count the number of objects in each cate

Culturally and Linguistically Responsive Instruction

Relevance to Families and Communities	During a unit focused on classifying objects and counting the number of objects in each category, 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, the home school connection activity can be

	sent home and the objective will be for students to help their mother with pairing up socks. The students will have to categorize white socks, black socks etc., then they would have to pair socks according to size. Once students are done, they will have to put the socks away etc. This will also elicit conversation with parents and other siblings when helping with laundry.	
Cross-Curricular Connections	Science: Consider providing opportunities to sort various organisms or animals into two piles, such as organisms with wings and those without wings. Students can then count the number of specimens in each pile. Finally, students can use these category counts and their understanding of cardinality to say whether there are more specimens with wings or without wings. Language Arts: Consider providing opportunities for students to sort words by spelling pattern or word families. Follow up with questions related to category counts and count comparisons.	
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?*	• 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 classifying objects and counting the number of objects in each category the types of mathematical tasks are critical because students at this level will have difficulty remembering number names and understanding new vocabulary for example identifying and classifying and categorizing. Therefore, the tasks associated with this cluster must be ongoing, it should be part of the kindergarten daily routine.

Planning for Multilayered System of Supports

Vertical Alignment

Previous Learning	*Current Learning*	*Future Learning*
• Connect to sorting objects onto a large graph according to one attribute, such as size, shape or color. • Connect to sorting, classifying, and ordering objects by size and other properties. • Connect to arranging objects in order according to characteristics or attributes, such as height.	• Connect to using understanding of counting and cardinality to accurately count to tell how many. Connect to recognizing whether the number in a group is greater than, less than, or equal to the number in another group. **(K.CC.4, 5, 6)**	• Connect to organizing, representing, interpreting, and comparing data with up to three categories. **(1.MD.4)**

Suggested Instructional Strategies

Pre-Teach

Level of Intensity	*Essential Question*	*Examples*
Targeted	*What pre-teaching will prepare students to productively struggle with the mathematics for this cluster within your HQIM?*	For example, some learners may benefit from targeted pre-teaching that introduces new representations (e.g., number lines) when studying Classify objects and count the number of objects in each category because students might have familiarity with counting on a number line and will need the number line as a point of reference especially if the child is at the count all stage in which the child has to recount everything from one. The number line will help the child classify numbers and determine which number is smaller, or larger than the others for organizing groups of objects when counting.
Intensive	*What critical understandings will prepare students to access the mathematics for this cluster?*	K.CC.C.6: This standard provides a foundation for work with classifying objects and counting the number of objects in each category because comparing numbers is a foundational skill which is critical to learning to classify groups of objects. Students must have previous experience with identifying groups of objects in groups as less than, equal to or greater than a number of objects in another group. Students must have the counting and matching skills. 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?	Examine assessments for evidence of lingering misconceptions (see common misconceptions). If students exhibit one more of these misconceptions, consider addressing the misconception, for example, students may benefit from re-engaging with content during a unit on classify objects and count the number of objects in each category by critiquing student approaches/solutions to make connections through a short mini-lesson because in kindergarten is all about kid-watch approach the teacher is everywhere and has ears and eyes everywhere, this means we have to be in constant interaction with the class and actively surveying and checking for understanding. You know when they give you that look or their board is blank you can quickly be responsive to students who are struggling. It might mean the child needs access to a number line, number chart or just needs one more push to get it. You will know once you are roaming the room and seeing what the kids are demonstrating with manipulatives, paper and pencil, etc.
Intensive	What assessment data will help identify content needing to be revisited for intensive interventions?	What assessment data will help identify content needing to be revisited for intensive interventions? Examine assessments for evidence of students still developing the underlying ideas, for example, some students may benefit from intensive extra time during and after a unit on classifying objects and count the number of objects in each category by addressing conceptual understanding because students must have a foundation in counting and also comparing numbers which one is bigger, smaller or if the numbers are the same. Students will need intensive reteach in the foundational skills in order to support students as they internalize the content. This support will mean maybe going back to counting and cardinality in order to build on the numeracy in order to move on to counting groups of objects and organizing them in order from least to greatest.

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?	To extend students learning about classifying objects and counting the number of objects in each category, some learners may benefit from an extension such as the opportunity to explore links between various topics when studying classify objects and count the number of objects in each category because the students can count shapes and categorize them, the students can classify the different shapes by color size or sides. Students can make a presentation of their work; they can model their work with pictures.

New Mexico Instructional Sc
Kindergarten Number and Operations in B
Guid

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

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

In this guide you will find:

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

New Mexico Instructional Sc
Kindergarten Number and Operations in B
Guid

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

- Work with numbers 11-19 to gain foundations for place value.
  - K.NBT.A.1

Grade	CCSS Domain	CCSS Cluster
K	Number and Operations in B Ten	Work with numbers 11 to 19 to gain foundations for pl value.

Cluster Standard: K.NBT.A.1

Standard	Standards for Mathematical Practice
Compose and decompose numbers from 11 to 19 into ten ones and some further ones, e.g., by using objects or drawings, and record each composition or decomposition by a drawing or equation (such as 18 = 10 + 8); understand that these numbers are composed of ten ones and one, two, three, four, five, six, seven, eight, or nine ones.	• **SMP 2:** Reason abstractly and quantitatively. • **SMP 4:** Model with mathematics. • **SMP 7:** Look for and make use of structure.
Clarification Statement	**Students Who Demonstrate Understanding Can...**
• Math drawings are simple drawings that make essential mathematical features and relationships salient while suppressing details that are not relevant to the mathematical ideas. • The **numerals** 11, 12, 13, ..., 19 need special attention for children to understand them. The first nine numerals 1, 2, 3, ..., 9, and 0 are essentially arbitrary marks. These same marks are used again to represent larger numbers. Children need to learn the differences in the ways these marks are used. For example, initially, a numeral such as 16 looks like "one, six," not "1 **ten** and 6 **ones**." Layered **place value** cards can help children see the 0 "hiding" under the **ones plac**e and that the 1 in the **tens place** really is 10 (ten ones).	• Describe a representation as ten ones and some additional ones, such as describing a bundle of 10 popsicle sticks and 4 additional popsicle sticks as 10 ones and 4 ones. • Connect equivalent representations for the numbers 11 to 19, such as knowing that the number 14 means to count out and bundle 10 popsicle sticks and then to grab 4 additional popsicle sticks and that a pictorial representation of a full tens frame and a second tens frame with four additional dots can be represented symbolically using the numeral “14”. • Write equations based on concrete and pictorial models that show how a teen number is composed of 10 ones and some additional ones, such as 14 = 10 + 4.
DOK	**Blooms**
2	Apply and Analyze

Common Misconceptions

• Being confused by the names for the teen numbers. • Connecting representations to number names.	• Struggling with the concept of unitizing (seeing ten ones as one ten).

ASSESSMENT GUIDE

- Work with numbers 11-19 to gain foundations for place value.

Grade	*CCSS Domain*	*CCSS Strand*
K	Number and Operations in Bas	Work with numbers 11-19 to gain foundations fo place value.

Sample Task #1 (Constructed Response)

Draw pictures to match the words.

I have 10 small circles and 2 small circles:

Sample Task #2

I have 10 ones and 2 ones.

Touch and count 10 things. Put a check over each one as you count 10 things.

I have 10 ones and ____ ones.

MLSS AND CLR GUIDE

- Work with numbers 11-19 to gain foundations for place value.

CCSS Domain	*CCSS Cluster*
Number and Operations in Bas	Work with numbers 11-19 to gain foundations for place value.

Culturally and Linguistically Responsive Instruction

Relevance to Families and Communities	During a unit focused on working with numbers 11-19 to gain foundations for place value, 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 number names and the place value across the languages in the classroom will help students get a better understanding of numbers in general making connections of number names in other languages. For kindergarten, there are lots of games that can be sent home for parents to play with their child and increase the child's understanding of numeracy and gain the language communication will increase while playing the games. Math nights would be another way of including parent and community involvement in which teachers will

	model how to play math games in different grade levels. Also, taking advantage of teachers' second languages to model games in the children's home language will be very powerful for parents whose second language is developing.	
Cross-Curricular Connections	Social Studies: In Kindergarten, the New Mexico Social Studies Standards state students should "understand the concept of product". Consider providing a connection for students to see the idea of unitizing in products that are individual items packaged together and sold as a single unit, such as a box of crayons or a box of popsicles. Morning Meeting (or other morning routine): Consider providing a connection to tracking the number of days in school in a way that makes the number efficient to count, such as full groups of tens frames and an additional partially filled tens frame.	
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 work with numbers 11-19 to gain foundations for place value the use of mathematical representations within the classroom is critical because five-year old children rely on visuals once a skill has been introduced in a concrete manner. Teacher's need to plan strategically, foreseeing that vocabulary in kindergarten will be a major issue with all the different experiences students come with. Not all students had the opportunity to attend pre-school, therefore teaching the foundations of place value should be in the progression of difficulty using the model of concrete to abstract representations and the teacher has to provide modeling using objects in order for students to gain understanding and benign to have a foundation with place value.

Planning for Multilayered System of Supports

Vertical Alignment

Previous Learning	*Current Learning*	*Future Learning*
• Connect to counting by one to 10 and higher. • Connect to counting the number of items in a group of up to 10 objects and knowing that the last number tells how many.	• Connect to decomposing numbers to ten into pairs in more than one way. **(K.OA.3)**	• Connect to thinking of 10 ones as "a ten". **(1.NBT.2a)** • Connect to understanding the numbers 10, 20, 30, 40, 50,60,70, 80, and 90 refer to one, two, three, four, five, six, seven, eight, and nine tens and 0 ones. **(1.NBT.2c)**

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 new mathematical language when studying work with numbers 11-19 to gain foundations for place value because this targeted instruction will support greater access to grade level instruction and assignments through the integration and early exposure to vocabulary words within the actual mini lesson for the upcoming place value lesson. Illustrations with the oral integration of the vocabulary and modeling will give these students a head start for the actual work with teen numbers and ten-frames.
Intensive	*What critical understandings will prepare students to access the mathematics for this cluster?*	K.OA.A.3: This standard provides a foundation for work with working with numbers from 11-19. Students gain foundations for place value because students need to have the basic foundation of counting numbers and also comparing numbers to identify which one is bigger or

		smaller. 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 numbers 11-19 can be composed and decomposed into a group of ten ones and some more ones.	• Represent a quantity from 11-19 with symbols and numerals. • Use objects, drawings, or equations to represent numbers 11-19 as a group of ten ones and some more ones. • Create models such as bundles of ten and ten frames to create a collection of "ten ones".	• Build on students' experience with the following skills: ○ Model how to make a group/bundle of ten. ○ Model how to use a group of ten to add on to make a new larger/greater number. ○ Connect equivalent representations for the numbers 11 to 19, such as knowing that the number 14 means to count out and bundle 10 popsicle sticks and then to grab 4 additional popsicle sticks and that a pictorial representation of a full tens frame and a second tens frame with four additional dots can be represented symbolically using the numeral "14". ○ Write equations based on concrete and pictorial models that show how a teen number is composed of 10 ones and some additional ones, such as 14=10+4. • Cognitive Strategies ○ Repeatedly model the strategies ○ Monitor the students' use of the strategies ○ Provide feedback to students ○ Teach self-questioning and self-monitoring strategies ○ Introduce multiple means of representation for mathematical ideas • Encourage students to use alternative tools to

		better access the grade level content. Examples include: ○ Digital or hands on manipulatives: two colored counters, linking cubes, base ten blocks, bears, ten frame counters, beans, straws, subitizing cards, beads, number bonds, etc... ○ Digital resources from math programs or online resources for counting, comparing, addition, and subtraction practice.
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?	Examine assessments for evidence of lingering misconceptions (see common misconceptions). If students exhibit one more of these misconceptions, consider addressing the misconception. For example, students may benefit from re-engaging with content during a unit on work with numbers 11-19 to gain foundations for place value by critiquing student approaches/solutions to make connections through a short mini-lesson because as students are able to give each other feedback this helps them with their critical thinking and examining whether they are correct or make changes to their work.
Intensive	What assessment data will help identify content needing to be revisited for intensive interventions?	What assessment data will help identify content needing to be revisited for intensive interventions? Examine assessments for evidence of students still developing the underlying ideas, for example, some students may benefit from intensive extra time during and after a unit work with numbers 11-19 to gain foundations for place value by offering opportunities to understand and explore different strategies because students need to have multiple opportunities to count numbers, know numbers and be able to decompose numbers. Working with numbers at this level means knowing that addition is putting together therefore a number line should be accessible to students but most importantly the use of ten-frames and markers should be used to show composition of numbers.
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?	To extend students learning about working with numbers 11-19, some learners may benefit from an extension such as open-ended tasks linking multiple disciplines when studying work with numbers 11-19 to gain foundations for place value because students will benefit from having to relate multiple skills/strategies like counting, adding smaller numbers to get bigger ones, understanding the value of 10 and some ones that come after 10 (11, 12, 13, 14, …). Having a ten-frame to work with and to show the work is essential especially when the task becomes more abstract as to utilizing symbols for addition.

New Mexico Instructional Scope

Kindergarten Operations and Algebraic Thinking Guide

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New Mexico Instructional Scope

Kindergarten 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.
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	*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 addition as putting together and adding to, and subtraction as taking apart and taking from.
  - K.OA.A.1
  - K.OA.A.2
  - K.OA.A.3
  - K.OA.A.4
  - K.OA.A.5

New Mexico Instructional Scope

Kindergarten Operations and Algebraic Thinking Guide

Grade	*CCSS Domain*	*CCSS Cluster*
K	**Operations and Algebraic Thinking**	**Understand addition as putting together and adding to, and subtraction as taking apart and taking from.**

Cluster Standard: K.OA.A.1

Standard	Standards for Mathematical Practice
Represent addition and subtraction with objects, fingers, mental images, drawings, sounds (e.g., claps), acting out situations, verbal explanations, expressions, or equations.	• **SMP 2:** Reason abstractly and quantitatively. • **SMP 5:** Use appropriate tools strategically.
Clarification Statement	**Students Who Demonstrate Understanding Can...**
• Math drawings facilitate reflection and discussion because they remain after the problem is solved. • The teacher can write expressions (e.g., 3 - 1) to represent operations, as well as writing equations that represent the whole situation before the solution (e.g., 3 - 1 = ?) or after (e.g., 3 - 1 = 2). Expressions like 3 - 1 or 2 + 1 show the operation, and it is helpful for students to have experience just with the expression so they can conceptually chunk this part of an equation. • Students may share different ways they show numbers using their fingers at home. Students show numbers with their fingers and to raise (or lower) them when counting. The three major ways used around the world are starting with the thumb, the little finger, or the pointing finger (ending with the thumb in the latter two cases). Each way has advantages physically or mathematically, so students can use whatever is familiar to them. The teacher can use the range of methods present in the classroom, and these methods can be compared by students to expand their understanding of numbers.	• Represent addition as putting together and adding to; with objects, fingers, drawings, sounds, acting out situations, or verbal explanations. • Represent subtraction as taking apart and taking from with objects, fingers, drawings, sounds, acting out situations, or verbal explanations. • Identify the mathematical symbols used to show addition and subtraction. • Relate an expression or equation for addition or subtraction to a situation.
DOK	**Blooms**

2	Apply and Analyze

Grade	*CCSS Domain*	*CCSS Cluster*
K	**Operations and Algebraic Thinking**	**Understand addition as putting together and adding to, and subtraction as taking apart and taking from.**

Cluster Standard: K.OA.A.2

Standard	**Standards for Mathematical Practice**
Solve addition and subtraction word problems, and add and subtract within 10, e.g., by using objects or drawings to represent the problem.	• **SMP 1:** Make sense of problems and persevere in solving them. • **SMP 4:** Model with mathematics.
Clarification Statement	**Students Who Demonstrate Understanding Can...**
• In Put Together/Take Apart situations, two quantities jointly compose a third quantity (the total), or a quantity can be decomposed into two quantities (the addends). This composition/decomposition may be physical or conceptual. These situations are acted out with objects initially and later students begin to move to conceptual mental actions of shifting between seeing the addends and seeing the total (e.g., seeing students or seeing boys and girls, or seeing red and green apples or all the apples). • Addition and Subtraction Situations by Grade Level.	• Represent addition word problems with objects or drawings. • Represent subtraction word problems with objects or drawings. • Add within 10. • Subtract within 10. • Solve addition and subtraction word problems using objects and drawings.
DOK	**Blooms**

2	Apply and Analyze

Grade	*CCSS Domain*	*CCSS Cluster*
K	**Operations and Algebraic Thinking**	**Understand addition as putting together and adding to, and subtraction as taking apart and taking from.**

Cluster Standard: K.OA.A.3

Standard	**Standards for Mathematical Practice**
Decompose numbers less than or equal to 10 into pairs in more than one way; using objects or drawings, and record each decomposition with a drawing or equation (e.g., 5 = 2 + 3 and 5 = 4 + 1).	• **SMP 2:** Reason abstractly and quantitatively. • **SMP 7:** Look for and make use of structure.
Clarification Statement	**Students Who Demonstrate Understanding Can...**
• Put Together/Take Apart situations with Both Addends Unknown play an important role in kindergarten because they allow students to explore various compositions that make each number. • Addition and Subtraction Situations by Grade Level.	• Decompose (break apart) numbers to 10 using objects or drawings, increasing their range with time. • Decompose a number between 1 and10 in more than one way (e.g., 5 = 2 + 3 and 5 = 4 + 1). • Identify an equation for a decomposed number.
DOK	**Blooms**
2-3	Analyze and Evaluate

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Grade	*CCSS Domain*	*CCSS Cluster*
K	**Operations and Algebraic Thinking**	**Understand addition as putting together and adding to, and subtraction as taking apart and taking from.**

Cluster Standard: K.OA.A.4

Standard	Standards for Mathematical Practice
For any number from 1 to 9, find the number that makes 10 when added to the given number, e.g., by using objects or drawings, and record the answer with a drawing or equation.	• **SMP 2**: Reason abstractly and quantitatively. • **SMP 6:** Attend to precision.
Clarification Statement	**Students Who Demonstrate Understanding Can...**
	• Determine the number to add to a given number between 1 and 9 to make 10. • Represent combinations of 10 with a drawing or equation.
DOK	**Blooms**
1-2	Remember and Apply

Grade	*CCSS Domain*	*CCSS Cluster*
K	**Operations and Algebraic Thinking**	**Understand addition as putting together and adding to, and subtraction as taking apart and taking from.**

Cluster Standard: K.OA.A.5

Standard	Standards for Mathematical Practice

Fluently add and subtract within 5.	• **SMP 6:** Attend to precision. • **SMP 7:** Look for and make use of structure.
Clarification Statement	**Students Who Demonstrate Understanding Can...**
• Experience with decompositions of numbers and with Add to and Take From situations enable students to begin to fluently add and subtract within 5.	• Consistently add within 5 with accurate and efficient results. • Consistently subtract within 5 with accurate and efficient results.
DOK	**Blooms**
1	Remember

Common Misconceptions

- Believing that certain words always indicate a particular operation.

Student Discourse Guide

- **Purposeful, rich classroom discourse offers students the opportunity to express their ideas, thinking, and to critique the reasoning of others in a variety of ways (writing, drawing, verbalizing). Purposeful implementation of classroom discourse allows students to activate funds of knowledge and to refine their mathematical understanding. When students have frequent opportunities for discourse they find various paths to solutions and reveal knowledge or misunderstandings to educators. The process also allows educators to honor students' culture, lived experiences and evolving math identities.**
- **Discourse that focuses on tasks that promote reasoning and problem solving is a primary mechanism for developing conceptual understanding and meaningful learning of mathematics (Michaels, O'Connor, and Resnick, 2008)**

Domain: **Operations and Algebraic Thinking**	Strand: **Understand addition as putting together and adding to, and subtraction as taking apart**

	and taking from.
Suggested Student Discourse Questions	
• What does it mean to decompose a number? Compose? • Explain to your partner how both of your groups are equal? If they are not equal, how can you make them equal?	• How do you use addition/subtraction at home? • How can you show a number bond using your fingers?

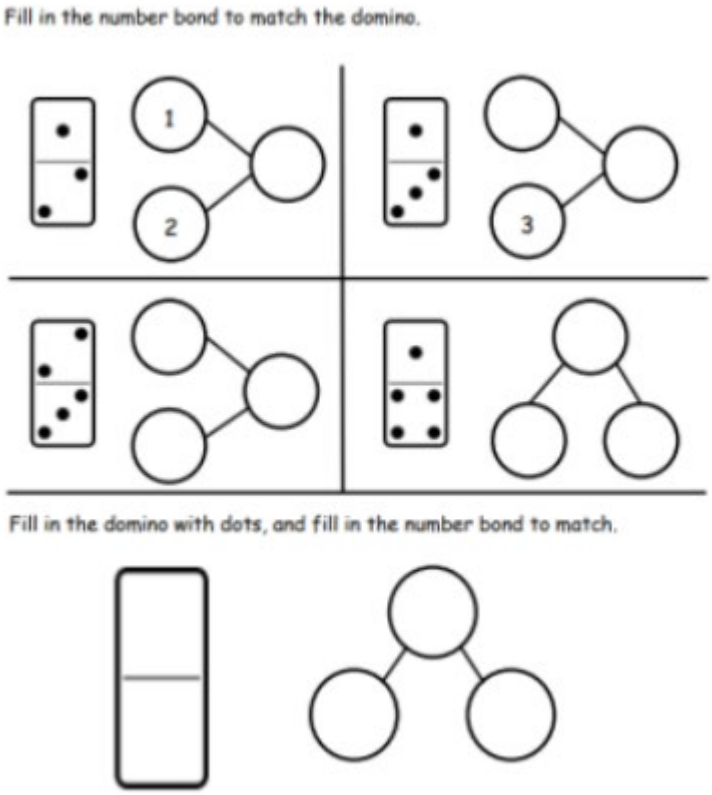
NEW MEXICO
Public Education Department

ASSESSMENT GUIDE

- Understand addition as putting together and adding to, and subtraction as taking apart and taking from.

Grade	*CCSS Domain*	*CCSS Strand*
K	**Operations and Algebraic Thinking**	**Understand addition as putting together and adding to, and subtraction as taking apart and taking from.**

Sample Task #1



Sample Task #2

New Mexico Instructional Scope

Kindergarten Operations and Algebraic Thinking Guide

MLSS AND CLR GUIDE

- Understand addition as putting together and adding to, and understand subtraction as taking apart and taking from.

CCSS Domain	*CCSS Cluster*
Operations and Algebraic Thinking	**Understand addition as putting together and adding to, and understand subtraction as taking apart and taking from**

Culturally and Linguistically Responsive Instruction

Relevance to Families and Communities	During a unit focused on understanding addition as putting together and adding to, and understanding subtraction as taking apart and taking from, 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 may bring from home different ways to show numbers with their fingers and to raise (or lower) them when counting. The three major ways used around the world are starting with the thumb, the little finger, or the pointing finger (ending with the thumb in the latter two cases).	
Cross-Curricular Connections	Social Studies: In Kindergarten, the New Mexico Social Studies Standards state students should “describe trade (e.g., buying and selling, bartering, simple exchange).”. Consider providing a connection for students to add and subtract related to buying and selling. Language Arts: Literature can offer connections about addition and subtraction such as: *Making Tens* by John Burstein and *Ten Little Caterpillars* by Bill Martin, Jr.	
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*	• Eliciting and Using Evidence of Student Thinking: Eliciting and using student thinking can promote a classroom culture in which mistakes or errors are viewed as opportunities for learning. When student thinking is at the center of classroom activity, “it is more likely that students who have felt evaluated or judged in their past mathematical experiences will make meaningful contributions to the classroom over

	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?*	time." For example, when studying understanding addition as putting together and adding to, and understanding subtraction as taking apart and taking from, eliciting and using student thinking is critical because providing opportunities for instructional conversations as students work through conceptualizing addition and subtraction helps build equity of participation and develops active listening skills.

Planning for Multi-Layered System of Supports

Vertical Alignment

Previous Learning	***Current Learning***	***Future Learning***
• Connect to students work with counting.	• Connect to decomposing large numbers in the range of 11-19 to gain foundations for place value by composing and decomposing into "ten ones and some more." (e.g., 18 is ten ones and eight more). **(K.NBT.1)**	• Connect to represent and solve problems with addition and subtraction within 20, including a new type of problem situation (compare). **(1.OA.1)** • Connect to understanding and applying properties of operations and the relationship between addition and subtraction. **(1.OA.3)** • Connect to adding and subtracting within 20. **(1.OA.6)** • Connect to working with addition and subtraction equations. **(1.OA.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 introduces new representations when studying the understanding of addition and subtraction because new symbols and concepts, such as the plus, minus, and equal sign will be introduced. Students at this point will more than likely have not been exposed to the understanding of combining numbers.
Intensive	*What critical understandings will prepare students to access the mathematics for this cluster?*	Indicator 9.3 (New Mexico Early Learning Guidelines, Essential Indicator): This standard provides a foundation for work with understanding addition as putting together and adding to, and subtraction as taking apart and taking away from because students need foundational skills relating to initial understanding of numbers and rote counting. Also, students learn that numbers are associated with words and numeral symbols. 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***

• Addition is putting together (composing).
• Subtraction is taking apart (decomposing).
• Understand that numbers, within 10, can be put together and taken apart in different ways and
	• Use concrete materials to model how numbers up to 10 are composed and decomposed.
	• Solve various types of addition and subtraction problems within 10, including word problems, using objects or
		• Build on students' experience with the following skills:
		  ○ Model how two parts (two quantities) can be put together to make a new quantity or larger quantity.
		  ○ Model how a whole number can be broken into parts or smaller numbers.
		  ○ Model how to use objects or drawings to represent and solve an addition and/or subtraction problem.

be recorded using equations or drawings.
• The connections between physical representations, drawings and provided equations and expressions for numbers within 10.
	drawings.
	• Find the missing addend that makes 10 when given a number 1-9.
	• Accurately, efficiently, flexibly and appropriately add and subtract numbers within 5.
		• 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:
		  ○ Digital or hands on manipulatives: two colored counters, linking cubes, base ten blocks, bears, ten frame counters, beans, straws, subitizing cards, beads, number bonds, etc...
		  ○ Digital resources from math programs or online resources for counting, comparing, addition, and subtraction practice.

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?	Examine assessments for evidence of lingering misconceptions (see common misconceptions). If students exhibit one more of these misconceptions, consider addressing the misconception by: having students re-engage with content during a unit on understanding addition and subtraction by examining tasks from a different perspective. Students may be able to learn addition or subtraction concepts in multiple ways such as through a short mini-lesson or with the use of visuals or manipulatives.
Intensive	What assessment data will help identify content needing to be revisited for intensive interventions?	Examine assessments for evidence of students still developing the underlying ideas, for example, some students may benefit from intensive extra time during and after a unit on being able to represent addition and subtraction with objects, fingers, mental images, drawings, sounds (e.g., claps, finger snaps), acting out situations, verbal explanations, expressions, or equations

		by offering opportunities to understand and explore different strategies through the use of concrete manipulatives or fingers and to accommodate various learning styles because some students may need to practice the concept by using more than one modality of learning to then progress from concrete to pictorial representations of the models.

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?	To extend students learning on understanding addition as putting together and adding to, and understanding subtraction as taking apart and taking from, 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 the skill to represent addition and subtraction with objects, fingers, mental images, drawings, sounds (e.g., claps), acting out situations, verbal explanations, expressions, or equations because students may benefit from learning to reframe a certain problem in a new way, such as moving away from using physical and visual cues to add and subtract and start using word based, or oral problems.