New Mexico Instructional Scope

# 1st Grade Operations and Algebraic Thinking 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

New Mexico Instructional Scope

# 1st Grade Operations and Algebraic Thinking Guide

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

## Standards Breakdown

- Represent and solve problems involving addition and subtraction.
  - 1.OA.A.1
  - 1.OA.A.2
- Understand and apply properties of operations and the relationship between addition and subtraction.
  - 1.OA.B.3
  - 1.OA.B.4
- Add and subtract within 20.
  - 1.OA.C.5
  - 1.OA.C.6
- Work with addition and subtraction equations.
  - 1.OA.D.7
  - 1.OA.D.8

New Mexico Instructional Scope

# 1st Grade Operations and Algebraic Thinking Guide

| *Grade* | *CCSS Domain* | *CCSS Cluster* |
|---|---|---|
| **1** | **Operations and Algebraic Thinking** | **Represent and solve problems involving addition and subtraction.** |

## Cluster Standard: 1.OA.A.1

| Standard | Standards for Mathematical Practice |
|---|---|
| Use addition and subtraction within 20 to solve word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using objects, drawings, and equations with a symbol for the unknown number to represent the problem. | • **SMP 1**: Make sense of problems and persevere in solving them.<br>• **SMP 2**: Reason abstractly and quantitatively.<br>• **SMP 3:** Construct viable arguments and critique the reasoning of others. |
| **Clarification Statement** | **Students Who Demonstrate Understanding Can...** |
| • In a **Compare situation**, two **quantities** are compared to find "how many **more**" or "how many **less**." **Addition and Subtraction Situations** by Grade Level. | • Represent word problems involving adding to, taking from, putting together, taking apart, or comparison situations using objects and drawings.<br>• Write equations involving adding to, taking from, putting together, taking apart, or comparison situations with unknown numbers in different positions.<br>• Explain how an equation represents an adding to, taking from, putting together, taking apart, or comparison situation.<br>• Solve word problems representing adding to, taking from, putting together, taking apart, or comparison situations with unknown numbers in different positions. |
| **DOK** | **Blooms** |
| 2 | Apply and Analyze |

New Mexico Instructional Scope

# 1st Grade Operations and Algebraic Thinking Guide

| *Grade* | *CCSS Domain* | *CCSS Cluster* |
|---|---|---|
| 1 | **Operations and Algebraic Thinking** | Understand and apply properties of operations and the relationship between addition and subtraction. |

## Cluster Standard: 1.OA.A.2

| Standard | Standards for Mathematical Practice |
|---|---|
| Solve word problems that call for addition of three whole numbers whose sum is less than or equal to 20, e.g., by using objects, drawings, and equations with a symbol for the unknown number to represent the problem. | • **SMP 1:** Make sense of problems and persevere in solving them.<br>• **SMP 2:** Reason abstractly and quantitatively.<br>• **SMP 3:** Construct viable arguments and critique the reasoning of others. |
| **Clarification Statement** | **Students Who Demonstrate Understanding Can...** |
| • In all mathematical problem solving, what matters is the explanation a student gives to relate a representation to a context, and not the representation separated from its context. | • Represent and solve word problems requiring the addition of three whole numbers using objects and drawings.<br>• Write equations involving the addition of three whole numbers representing the unknown using a symbol.<br>• Add three whole numbers whose sum is less than or equal to 20. |
| **DOK** | **Blooms** |
| 2 | Apply and analyze |

## Common Misconceptions

| | |
|---|---|
| • Students may believe that certain words always | • Students may believe it is not possible to add or |

| | |
|---|---|
| indicate a particular operation. | subtract more than two numbers. |

| *Grade* | *CCSS Domain* | *CCSS Cluster* |
|---|---|---|
| **1** | **Operations and Algebraic Thinking** | **Understand and apply properties of operations and the relationship between addition and subtraction.** |

## Cluster Standard: 1.OA.B.3

| **Standard** | **Standards for Mathematical Practice** |
|---|---|
| Apply properties of operations as strategies to add and subtract. *Examples: If 8 + 3 = 11 is known, then 3 + 8 = 11 is also known. (Commutative property of addition.) To add 2 + 6 + 4, the second two numbers can be added to make a ten, so 2 + 6 + 4 = 2 + 10 = 12. (Associative property of addition.)* | • **SMP 2:** Reason abstractly and quantitatively.<br>• **SMP 7:** Look for and make use of structure. |
| **Clarification Statement** | **Students Who Demonstrate Understanding Can...** |
| • Methods involve **decomposing** an **addend** and **composing** it with the other addend to form an **equivalent** but easier problem. This relies on **properties of operations**. Students do not necessarily have to **justify** their **representations** or **solutions** using properties, but they can begin to learn to recognize these properties in action and discuss their use after **solving**. | • Use representations to solve addition and subtraction problems.<br>• Describe and make generalizations regarding properties (adding or subtracting 0 does not change the number) and strategies (making a ten when adding more than two numbers).<br>• Show or explain their thinking. |
| **DOK** | **Blooms** |
| 2 | Apply and Analyze |

NEW MEXICO
Public Education Department

New Mexico Instructional Scope

# 1st Grade Operations and Algebraic Thinking Guide

New Mexico Instructional Scope

# 1st Grade Operations and Algebraic Thinking Guide

| *Grade* | *CCSS Domain* | *CCSS Cluster* |
|---|---|---|
| 1 | Operations and Algebraic Thinking | Understand and apply properties of operations and the relationship between addition and subtraction. |

## Cluster Standard: 1.OA.B.4

| Standard | Standards for Mathematical Practice |
|---|---|
| Understand subtraction as an unknown-addend problem. *For example, subtract 10 - 8 by finding the number that makes 10 when added to 8.* | • **SMP 4:** Model with mathematics.<br>• **SMP 7:** Look for and make use of structure. |
| **Clarification Statement** | **Students Who Demonstrate Understanding Can...** |
| • **Put Together/Take Apart problems** with **Addend Unknown** afford students the opportunity to see **subtraction** as the **opposite** of **addition** in a different way than as reversing the action, namely as finding an unknown addend. The meaning of subtraction as an unknown-addend addition problem is one of the essential understandings' students will need in middle school in order to extend arithmetic to **negative rational numbers**. | • Explain the relationship between addition and subtraction using objects, pictures, numbers and words.<br>• Represent the relationship between addition and subtraction using objects, pictures, numbers and words.<br>• Rewrite a subtraction equation as an addition equation with a missing addend. |
| **DOK** | **Blooms** |
| 2 | Apply and Analyze |

## Common Misconceptions

| | |
|---|---|
| • Students might believe that subtraction is commutative.<br>• Students may not realize they can count on to find the difference. | • Students confuse the parts of addition and subtraction equations. |

New Mexico Instructional Scope

# 1st Grade Operations and Algebraic Thinking Guide

| *Grade* | *CCSS Domain* | *CCSS Cluster* |
|---|---|---|
| **1** | **Operations and Algebraic Thinking** | **Add and Subtract within 20.** |

## Cluster Standard: 1.OA.C.5

| **Standard** | **Standards for Mathematical Practice** |
|---|---|
| Relate counting to addition and subtraction (e.g., by counting on 2 to add 2). | • **SMP 5:** Use appropriate tools strategically.<br>• **SMP 7:** Look for and make use of structure. |
| **Clarification Statement** | **Students Who Demonstrate Understanding Can...** |
| • Unlike **counting down**, **counting on** reinforces that **subtraction** is an **unknown-addend problem**. Learning to think of and **solve** subtractions as unknown addend problems makes subtraction as easy as **addition** (or even easier), and it emphasizes the relationship between addition and subtraction. | • Represent addition and subtraction with base ten blocks, counters, ten frames, number lines, and drawings.<br>• Add by counting all and counting on.<br>• Explain that one can count on from either addend in an addition equation.<br>• Recognize that +1 means the next number and that +2 means the next-next number in the counting sequence.<br>• Subtract by counting back or counting on.<br>• Explain that one can count back the total amount being subtracted (i.e. in 9-7, one can count back 7) or that one can count back to the number being subtracted (i.e. in 9-7, one can count back to 7).<br>• Recognize that -1 means the number before and that -2 means the number that is two numbers before in the counting sequence. |
| **DOK** | **Blooms** |
| 1-2 | Remember, Understand, and Analyze |

NEW MEXICO
Public Education Department

New Mexico Instructional Scope

# 1st Grade Operations and Algebraic Thinking Guide

| *Grade* | *CCSS Domain* | *CCSS Cluster* |
|---|---|---|
| 1 | Operations and Algebraic Thinking | Add and subtract within 20. |

## Cluster Standard: 1.OA.C.6

| Standard | Standards for Mathematical Practice |
|---|---|
| Add and subtract within 20, demonstrating fluency for addition and subtraction within 10. Use strategies such as counting on; making ten (e.g., 8 + 6 = 8 + 2 + 4 = 10 + 4 = 14); decomposing a number leading to a ten (e.g., 13 - 4 = 13 - 3 - 1 = 10 - 1 = 9); using the relationship between addition and subtraction (e.g., knowing that 8 + 4 = 12, one knows 12 - 8 = 4); and creating equivalent but easier or known sums (e.g., adding 6 + 7 by creating the known equivalent 6 + 6 + 1 = 12 + 1 = 13). | • **SMP 6:** Attend to precision.<br>• **SMP 7:** Look for and make use of structure. |
| **Clarification Statement** | **Students Who Demonstrate Understanding Can...** |
| • Students might use the **commutative property in addition** to change ? + 6 = 15 to 6 +? = 15, then count on or use methods to **compose** 4 (to **make ten**) plus 5 (**ones** in the 15) to find 9. Students might reverse the action in the **situation** represented by ? - 6 = 9 so that is becomes 9 + 6 = ?. Or they might use their knowledge that the **total** is the first **number** in a **subtraction equation** and the last number in an **addition equation** to rewrite the **situation equation** as a **solution equation**: ? - 6 = 9 becomes 9 + 6 = ? or 6 + 9 = ?. Appendix from K, Counting and Cardinality; K–5, Operations and Algebraic Thinking: Methods used for solving **single-digit** addition and subtraction problems. | • Consistently add within 10 with accurate and efficient results.<br>• Consistently subtract within 10 with accurate and efficient results.<br>• Use strategies to find sums and differences when they can't be recalled quickly, including counting on, making ten, and doubles.<br>• Show or explain their thinking. |

New Mexico Instructional Scope

# 1st Grade Operations and Algebraic Thinking Guide

| DOK | Blooms |
|---|---|
| 1-2 | Remember, Understand, and Analyze |

## Common Misconceptions

- Students might double count a number when adding or subtracting. For example, starting with the 6 when adding 4 to get 6, 7, 8, or 9 rather than 10.

| *Grade* | *CCSS Domain* | *CCSS Cluster* |
|---|---|---|
| 1 | Operations and Algebraic Thinking | Work with addition and subtraction equations. |

## Cluster Standard: 1.OA.D.7

| Standard | Standards for Mathematical Practice |
|---|---|
| Understand the meaning of the equal sign and determine if equations involving addition and subtraction are true or false. For example, which of the following equations are true and which are false? 6 = 6, 7 = 8 - 1, 5 + 2 = 2 + 5, 4 + 1 = 5 + 2. | • **SMP 2:** Reason abstractly and quantitatively.<br>• **SMP 6:** Attend to precision. |
| **Clarification Statement** | **Students Who Demonstrate Understanding Can:** |
| • In this standard, students develop an understanding of the meaning of the **equal sign** and apply their understanding in order to determine whether an equation is true. Students learn that the equal sign does not mean "the answer comes next", but that the symbol signifies an equivalent relationship. Students need to understand that an **equation** needs to "**balance**", with **equal quantities** on both sides of the equal sign. Once students understand the meaning of the equal sign, they can determine if an equation is true (9 = 9) or not true (9 = 8). | • Explain the meaning of equal using models and drawings.<br>• Determine if two quantities are equal.<br>• Represent equal quantities with an equation with operations on either side, neither side, or both sides of the equal sign.<br>• Determine whether an equation is true or false. |

New Mexico Instructional Scope

# 1st Grade Operations and Algebraic Thinking Guide

| DOK | Blooms |
|---|---|
| 2-3 | Analyze and Evaluate |

| *Grade* | *CCSS Domain* | *CCSS Cluster* |
|---|---|---|
| 1 | Operations and Algebraic Thinking | Work with addition and subtraction equations. |

## Cluster Standard: 1.OA.D.8

| Standard | Standards for Mathematical Practice |
|---|---|
| Determine the unknown whole number in an addition or subtraction equation relating three whole numbers. *For example, determine the unknown number that makes the equation true in each of the equations 8 + ? = 11, 5 = _ - 3, 6 + 6 = _.* | • **SMP 3:** Construct viable arguments and critique the reasoning of others.<br>• **SMP 7:** Look for and make use of structure. |
| **Clarification Statement** | **Students Who Demonstrate Understanding Can...** |
| • In this standard, students develop an understanding of the meaning of the **equal sign** and apply their understanding in order to determine whether an equation is true. Students learn that the equal sign does not mean "the answer comes next", but that the symbol signifies an equivalent relationship. Students need to understand that an **equation** needs to "**balance**", with **equal quantities** on both sides of the equal sign. Once students understand the meaning of the equal sign, they can determine if an equation is true (9 = 9) or not true (9 = 8). | • Determine the unknown in various positions in an addition equation.<br>• Determine the unknown in various positions in a subtraction equation.<br>• Explain how an unknown in an equation was determined. |

New Mexico Instructional Scope

# 1st Grade Operations and Algebraic Thinking Guide

| | |
|---|---|
| **DOK** | **Blooms** |
| 2 | Apply and Analyze |

## Common Misconceptions

- Students thinking that the equals sign means that an operation must be performed on the numbers on the left and the result of this operation is written on the right.

## 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: **Operations and Algebraic Thinking** | Strand: **Represent and solve problems involving addition and Subtraction.** |
|---|---|

## Suggested Student Discourse Questions

- How do you know when you add? How do you know when you subtract?
- Why did (student's name) use subtraction/addition to solve the problem?
- When do you add or subtract at the grocery store?
- Can you explain how (students name) represented adding objects together?

| Domain: **Operations and Algebraic Thinking** | Strand: **Understand and apply properties of** |
|---|---|

NEW MEXICO
Public Education Department

| | **addition and subtraction** |
|---|---|
| **Suggested Student Discourse Questions** | |
| • How can we decompose the number "5"?<br>• Why can we switch numbers when we add but not when we subtract? (associative) | • Think about things that go together (green/red chili, brother/sister, salt/pepper). When you put them together in any order, do you still get the same thing? (commutative)<br>• Describe the strategy you used to solve the equation. |

| Domain: **Operations and Algebraic Thinking** | Strand: **Add and subtract within 20.** |
|---|---|
| **Suggested Student Discourse Questions** | |
| • How do you "make a ten?"<br>• How can you tell a friend how to find a missing number in an equation? | • Where do you see addition and subtraction used in your home?<br>• What tools can you use to add or subtract? |

| Domain: **Operations and Algebraic Thinking** | Strand: **Work with addition and subtraction equations.** |
|---|---|
| **Suggested Student Discourse Questions** | |
| • What does it mean to balance something? How can we find the unknown addend?<br>• How do you know when to add and when to subtract? | • How would you use an addition or subtraction equation on your next trip to the store?<br>• How can you show that you know when to add or subtract, and how do you know which strategy to pick? |

New Mexico Instructional Scope

# 1st Grade Operations and Algebraic Thinking Guide

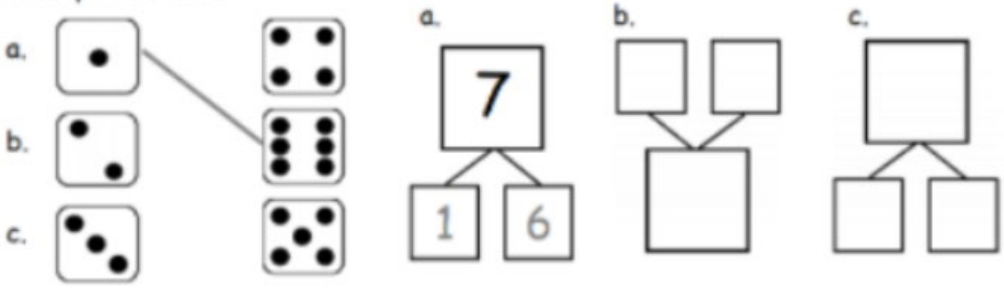
## ASSESSMENT GUIDE

- Represent and solve problems involving addition and subtraction
- Understand and apply properties of operations and the relationship between addition and subtraction
- Add and subtract within 20
- Work with addition and subtraction equations

| *Grade* | *CCSS Domain* | *CCSS Strand* |
|---|---|---|
| **1** | **Operations and Algebraic Thinking** | **Represent and solve problems involving addition and subtraction.** |
| | **Sample Task #1 (Constructed Response)** | |

NEW MEXICO
Public Education Department

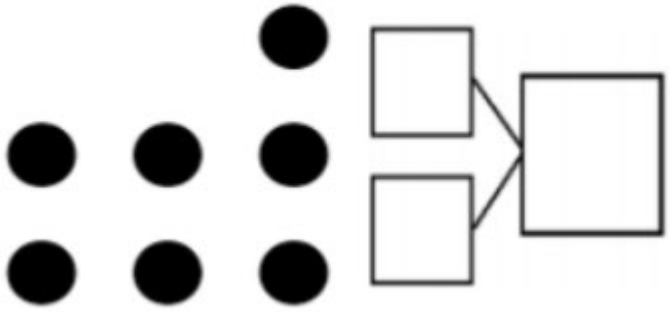
Match the dice to show different ways to make 7. Then, draw a number bond for each pair of dice.




**Sample Task #2**

Circle 2 parts you see. Make a number bond to match.

1.



New Mexico Instructional Scope

**1st Grade Operations and Algebraic Thinking Guide**

NEW MEXICO
Public Education Department

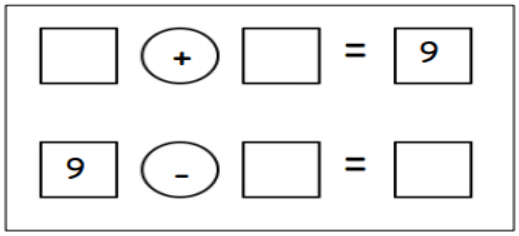
| *Grade* | *CCSS Domain* | *CCSS Strand* |
|---|---|---|
| **1** | **Operations and Algebraic Thinking** | **Understand and apply properties of operations and the relationship between addition and subtraction.** |

**Sample Task #1 (Constructed Response)**

Match the math stories to the number sentences that tell the story. Make a math drawing to solve.

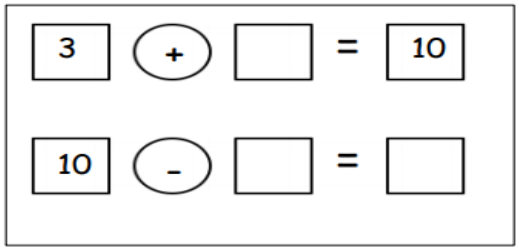
1. a.

There are 10 flowers in a vase.
6 are red.
The rest are yellow.
How many flowers are yellow?




b.

There are 9 apples in a basket.
6 are red.
The rest are green.
How many apples are green?

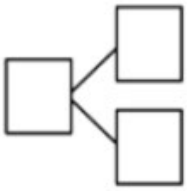



**Sample Task #2**

NEW MEXICO
Public Education Department

Subtract. Make a math drawing for each problem like the ones above. Write a number bond.

1.



10 - 5 = _____

| *Grade* | *CCSS Domain* | *CCSS Strand* |
|---|---|---|
| **1** | **Operations and Algebraic thinking** | **Add and Subtract within 20.** |

**Sample Task #1 (Constructed Response)**

There are 9 ducks swimming along in a line. There are 2 grown-up ducks, and the rest are babies. How many of the ducks are babies?

a. Explain your thinking using pictures, numbers, or words.

b. Write a number sentence that shows how you solved the problem.

_____

NEW MEXICO
Public Education Department

| | |
|---|---|
| | **Sample Task #2** |
| | Fill in the missing number. Visualize your 5-groups to help you.<br><br>1. $7 - \_\_\_\_ = 7$ |

| *Grade* | *CCSS Domain* | *CCSS Strand* |
|---|---|---|
| **1** | **Operations and Algebraic Thinking** | **Work with addition and subtraction equations** |

| | |
|---|---|
| | **Sample Task #1 (Constructed Response)** |
| | To solve 7 - 6, Ben thinks you should count back, and Pat thinks you should count on. Which is the best way to solve this expression? Make a simple math drawing to show why.<br><br>7 - 6 = _____ |
| | **Sample Task #2** |

New Mexico Instructional Scope

# 1st Grade Operations and Algebraic Thinking Guide


## MLSS AND CLR GUIDE

- Represent and solve problems involving addition and subtraction
- Understand and apply properties of operations and the relationship between addition and subtraction
- Add and subtract within 20
- Work with addition and subtraction equations

| *CCSS Domain* | *CCSS Cluster* |
|---|---|
| **Operations and Algebraic Thinking** | **Represent and solve problems involving addition and subtraction.** |

## Culturally and Linguistically Responsive Instruction

| | |
|---|---|
| **Relevance to Families and Communities** | During a unit focused on how to represent and solve problems involving addition and subtraction with the use of up to 3 numbers within 20, 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, since students are learning to solve addition and subtraction problems, they can relate this skill to real world examples relevant to their city and culture. Students can bring in examples that relate to them and even provide pictures of the items to support their knowledge of adding to and taking away. |
| **Cross-Curricular Connections** | Social Studies: In first grade the New Mexico Social Studies Standards state students should “understand the concept of goods and services”. Consider providing a connection for students to “sell” goods to each other or the larger community (such as in a first-grade market) as a context for math story problems.<br>Language Arts: Writer’s Workshop in first grade includes a unit on Small Moments. Consider providing a connection between the beginning, middle and end of the stories students write and making sense of a math story problem using the structure of beginning, middle and end. |

NEW MEXICO
Public Education Department

| | | |
|---|---|---|
| **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?*<br>• *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?* | • 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 how to represent and solve problems involving addition and subtraction with the use of up to 3 numbers within 20 goal setting is critical because it allows students to take ownership of their own learning related to addition and subtraction. Students can self-reflect on their level of comfort related to this skill and reflect on areas in which they need support. Students can also make goals of making real world connections relevant to their culture using addition and subtraction. Students may benefit from using objects, drawings or equations to solve for the unknown value. Another example is students may use objects or drawings that are significant to them culturally, and this may allow for more student engagement to take place. |

## Planning for Multi-Layered System of Supports

**Vertical Alignment**

| ***Previous Learning*** | ***Current Learning*** | ***Future Learning*** |
|---|---|---|
| • Connect to learning the partners that make 10 for any number and knowing all decompositions for any number below 10. The idea of decomposing numbers (taking apart numbers) lays a foundation for developing strategies based on place value and properties of | • Connect to using what students know about making 10 to work with larger numbers and problems with multiple addends. **(1.OA.3,6)**<br>• Connect to working to gain confidence and fluency with strategies when solving problems and using these skills to answer questions regarding | • Connect to working to become fluent within 100 and to extend their known strategies to larger numbers and two-step word problems. **(2.OA.1)**<br>• Connect to applying this skill with problems in a variety of contexts involving length, picture graphs and bar |

NEW MEXICO
Public Education Department

| | | |
|---|---|---|
| operations. **(K.OA.3-4)**<br>• Connect to knowing all teen numbers as10 ones and some more. **(K.NBT.1)** | data in a graph. **(1. MD.4)** | graphs. **(2.NBT.5)** |

**Suggested Instructional Strategies**

**Pre-Teach**

| ***Level of Intensity*** | ***Essential Question*** | ***Examples*** |
|---|---|---|
| Targeted | *What pre-teaching will prepare students to productively struggle with the mathematics for this cluster within your HQIM?* | For example, some learners may benefit from targeted pre-teaching that rehearses prior learning when studying how to represent and solve problems involving addition and subtraction because it is building on the foundational skills that students learn in kindergarten such as understanding addition as adding to and subtraction as being taking apart, or taking away from. |
| Intensive | *What critical understandings will prepare students to access the mathematics for this cluster?* | K.OA.A.1:This standard provides a foundation for work with being able to represent addition and subtraction with objects, fingers, mental images, drawings*, sounds (e.g., claps), acting out situations, verbal explanations, expressions, or equations because this standard is critical for students to understand what counting through addition and subtraction is. Also, it allows for students to fluently add or subtract within 10 using manipulatives or drawings if needed. 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*** |
|---|---|---|
| • What is happening in a word problem and how to identify what they are looking for in each situation. | • Solve addition and subtraction word problems within 20 using a strategy that makes sense to them. | • Build on students' experience with the following skills:<br>○ Model how to use a number line and hundreds chart to count on or count back to add or subtract.<br>○ Model multiple strategies to add and |

| | | |
|---|---|---|
| • The relationship between addition and subtraction when solving for unknowns in all positions. | • Represent their thinking using objects, pictures, number lines, hundreds charts, words, and numbers.<br>• Write equations that represent the action of addition and subtraction word problems. | subtract.<br>○ Model how the symbols represent the action of addition and subtraction as well as the sum or difference is represented using the equal to symbol.<br>○ Utilize think alouds, classroom discourse to allow students to learn how to use and explain how the symbols represent the action of addition and subtraction.<br><br>• Cognitive Strategies<br>○ Repeatedly model the strategies<br>○ Monitor the students' use of the strategies<br>○ Provide feedback to students<br>○ Teach self-questioning and self-monitoring strategies<br>○ Introduce multiple means of representation for mathematical ideas<br><br>• Encourage students to use alternative tools to better access the grade level content. Examples include:<br>○ Digital or hands on manipulatives: two colored counters, linking cubes, base ten blocks, bears, ten frame counters, beans, straws, subitizing cards, beads, number bonds, dice, dominoes, playing cards, etc...<br>○ 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? | For example, students may benefit from re-engaging with content during a unit on being able to represent and solve problems involving addition and subtraction by examining tasks from a different perspective through a short mini-lesson because students may benefit from seeing things in a new way and gaining a new perspective to make meaning. In addition, students can benefit from |

| | | |
|---|---|---|
| | | the use of manipulatives and/or drawings to solidify the understanding of this skill. |
| Intensive | What assessment data will help identify content needing to be revisited for intensive interventions? | For example, some students may benefit from intensive extra time during and after a unit in which students are able to represent and solve problems involving addition and subtraction by offering opportunities to understand and explore different strategies because students can better understand the skill if they have multiple strategies to approach and solve a problem. Students may make more connections and see things differently if they have knowledge of multiple strategies. Also, students may recognize patterns within numbers while adding and subtracting, such as looking for and identifying a combination of 10 and patterns with doubling of a number. |

| **Extension** | |
|---|---|
| ***Essential Question*** | ***Examples*** |
| What type of extension will offer additional challenges to 'broaden' your student's knowledge of the mathematics developed within your HQIM? | For example, some learners may benefit from an extension such as the application of and development of abstract thinking skills when studying the skill of being able to represent and solve problems involving addition and subtraction because students are now thinking about numbers in a more abstract way. This allows them to shift their thinking from concrete and pictorial to abstract which allows for more depth of knowledge to take place. Students can also apply this knowledge to multiple problems without having the items in front of them. |

| ***CCSS Domain*** | ***CCSS Cluster*** |
|---|---|
| **Operations and Algebraic Thinking** | **Understand and apply properties of operations and the relationship between addition and subtraction** |

## Culturally and Linguistically Responsive Instruction

| | |
|---|---|
| **Relevance to Families and Communities** | During a unit focused on the skill of being able to understand and apply properties of operations and the relationship between addition and subtraction, 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 share ways to count or refer to numbers in their language, or a language spoken at home, to support their learning and extension of peers' learning. Also, this can promote engagement with all students and provide a more robust understanding of numbers as students make connections to different structures of number-names in other languages. | |
| **Cross-Curricular Connections** | Language Arts: Literature can offer connections to help students move from counting to addition such as: *Math Fables* by Greg Tang and *Math Fables Too* by Greg Tang.<br>Art: Even though it is not explicit in the standard, the clarification statement makes it clear that it is important for students to share, discuss and compare their strategies as a class. Consider providing a connection where they can work together to make posters that illustrate each strategy. | |
| **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?*<br>• *How can you create connections between the cultural and linguistic behaviors of your students' home culture and language, the culture and language of school mathematics to support students in creating mathematical identities as capable mathematicians that can use mathematics within school and society?* | • Tasks: The type of mathematical tasks and instruction students receive provides the foundation for students' mathematical learning and their mathematical identity. Tasks and instructions that provide greater access to mathematics and convey the creativity of mathematics by allowing for multiple solution strategies and development of the standards for mathematical practice lead to more students viewing themselves mathematically successful capable mathematicians than tasks and instruction which define success as memorizing and repeating a procedure demonstrated by the teacher. For example, when studying the skill of being able to understand and apply properties of operations and the relationship between addition and subtraction the types of mathematical tasks are critical because students are building the foundation and understanding of numbers and the relationship between them, while also solving for an unknown value. Also, students are developing multiple strategies associated with the commutative property and associative property. As students are developing skills related to addition and subtraction, they can relate to real world examples that can be important to their culture and language. Students can also incorporate their language and how to count in their language as they work to solve math problems. |

## Planning for Multi-Layered System of Supports

New Mexico Instructional Scope

# 1st Grade Operations and Algebraic Thinking Guide

| Vertical Alignment | | |
|---|---|---|
| ***Previous Learning*** | ***Current Learning*** | ***Future Learning*** |
| • Connect to developing the understanding that addition means putting together and subtraction means taking apart and representing and solving word problems within 10. **(K.OA.2)** | • Connect to using patterns that students notice; such as place value understanding and properties of operations to add and subtract within 100. **(1.NBT.4)**<br>• Connect to becoming fluent adding and subtracting within10, using strategies that make sense to them and explaining the reasoning behind the strategies used. **(1.OA.6)** | • Connect to using place value understanding and properties of operations to add and subtract within100 using up to four 2-digit numbers and explaining why certain strategies work. Connect to using concrete models, drawings, and place value strategies to explore addition and subtraction within 1000. **(2.NBT.5-9)** |

| Suggested Instructional Strategies | | |
|---|---|---|
| **Pre-Teach** | | |
| ***Level of Intensity*** | ***Essential Question*** | ***Examples*** |
| Targeted | *What pre-teaching will prepare students to productively struggle with the mathematics for this cluster within your HQIM?* | For example, some learners may benefit from targeted pre-teaching that provides additional time for confusion to happen with new mathematical ideas when studying the skill of being able to understand and apply properties of operations and the relationship between addition and subtraction because students are learning about the commutative property along with the associative property to support the understanding of addition. Students are also looking for combinations to make ten and may benefit from having additional time with this new thinking. |
| Intensive | *What critical understandings will prepare students to access the mathematics for this cluster?* | K.OA.A.2: This standard provides a foundation for work with having access to solve addition and subtraction word problems, and add and subtract within 10, e.g., by using objects or drawings to represent the problem because this skill allows students to fully understand that addition is adding parts together and subtraction is taking apart from a total. Students can use manipulative |

| | | |
|---|---|---|
| | | and/or drawings to support their thinking and development of the skill. 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*** |
| • Important properties of addition and subtraction.<br>• The relationship between addition and subtraction. | • Describe addition and subtraction patterns and make generalizations.<br>• Use addition to solve subtraction problems. | • Build on students' experience with the following skills:<br>  ○ Utilize objects to show that they can be put together in any order and it will have the same total.<br>  ○ Model how the sum of an addition problem can be used as the whole in a subtraction problem pointing out that the whole is broken into the same numbers as the addends of the addition problem.<br><br>• Cognitive Strategies<br>  ○ Repeatedly model the strategies<br>  ○ Monitor the students' use of the strategies<br>  ○ Provide feedback to students<br>  ○ Teach self-questioning and self-monitoring strategies<br>  ○ Introduce multiple means of representation for mathematical ideas<br><br>• Encourage students to use alternative tools to better access the grade level content. Examples include:<br>  ○ Digital or hands on manipulatives: two colored counters, linking cubes, base ten blocks, bears, ten frame counters, beans, straws, subitizing cards, beads, number bonds, dice, dominoes, playing cards, etc...<br>  ○ 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? | For example, students may benefit from re-engaging with content during a unit on being able to understand and apply properties of operations and the relationships between addition and subtraction by providing specific feedback to students on their work through a short mini-lesson because the students can then receive immediate feedback to support and correct any misconceptions the students may have. It is important to ensure that students are following the correct procedure when adding or subtracting, and immediate feedback and help support students to follow the correct order of steps. |
| Intensive | What assessment data will help identify content needing to be revisited for intensive interventions? | For example, some students may benefit from intensive extra time during and after a unit on being able to understand and apply properties of operations and the relationships between addition and subtraction by offering opportunities to understand and explore different strategies because this allows students to rely on multiple strategies to approach and solve a problem rather than one that may be causing confusion. Also, students can benefit from knowing multiple strategies because it can deepen their understanding and allow them to make connections about addition and subtraction. |
| **Extension** | | |
| ***Essential Question*** | | ***Examples*** |
| What type of extension will offer additional challenges to 'broaden' your student's knowledge of the mathematics developed within your HQIM? | | For example, some learners may benefit from an extension such as the application of and development of abstract thinking skills when studying how to understand and apply properties of operations and the relationships between addition and subtraction because students can move from concrete and pictorial representations of addition and subtraction to more abstract concepts. This allows students to build on their skills and understand |

| | |
|---|---|
| | mathematical relationships, specifically related to addition and subtraction. |

| *CCSS Domain* | *CCSS Cluster* |
|---|---|
| **Operations and Algebraic Thinking** | **Add and subtract within 20** |

## Culturally and Linguistically Responsive Instruction

| | | |
|---|---|---|
| **Relevance to Families and Communities** | During a unit focused on adding and subtracting within 20, 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, count, add and subtract in your home language. Use items from around the house to model addition and subtraction problems. | |
| **Cross-Curricular Connections** | Science: In first grade the NGSS state students should "make observations at different times of year to relate the amount of daylight to the time of year." Consider providing a connection for students to find the difference in the number of hours of daylight during different times of the year.<br><br>Language Arts: Letters or digraphs are something that students can count. Consider providing a connection where students "hunt" for particular letters or digraphs on 2 different pages of their reading book and then add or subtract to find the total or difference, being mindful that all answers are within 20. | |
| **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?*<br>• *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 adding and subtracting within 20 the types of mathematical tasks are critical because it allows students flexibility to work within components of their own culture and language. They can use their home language skills to help understand what the problem is asking. |

NEW MEXICO
Public Education Department

| | | |
|---|---|---|
| | *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?* | Students can also choose items such as counters lines or methods of counting that might be available in the home setting. |

# Planning for Multi-Layered System of Supports

## Vertical Alignment

| *Previous Learning* | *Current Learning* | *Future Learning* |
|---|---|---|
| • Connect to counting to 100 and count on from any given number within 100. **(K.CC.1)**<br>• Connect reading and writing to 20 and demonstrating one-to-one correspondence when counting objects. **(K.CC.3, K.CC.4a)** | • Connect to developing fluency (working flexibly, accurately, efficiently and appropriately) when adding and subtracting within 10 but continuing to use strategies to solve within 100 and explaining their reasoning. **(1.NBT.4)** | • Connect to fluently adding and subtracting within 20 using mental strategies and mentally adding two 1-digit numbers. **(2.OA.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 rehearses prior learning when studying add and subtract within 20 because the foundation of this cluster is to understand that counting leads to understanding addition and subtraction. Students can practice counting forward and/or backward from a given number. This can be a group activity. |
| Intensive | *What critical understandings* | K.CC. A2: Counting to tell the number of objects, is the |

| | | |
|---|---|---|
| | *will prepare students to access the mathematics for this cluster?* | prior standard. This standard provides a foundation for work with adding and subtracting numbers within 20 because it provides the understanding that you can a given number of objects within 20. 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*** |
| • How to use strategies for addition and subtraction, including counting on, counting back, making 10, doubles, doubles + 1, and thinking of subtraction as an unknown addend problem.<br>• How to extend strategies for facts with sums to 10 to numbers within 20. | • Explain their strategy for finding the answer to addition and subtraction facts within 10.<br>• Look for patterns as they use counting strategies.<br>• Flexibly, accurately, efficiently and appropriately add and subtract within 10.<br>• Use concrete, pictorial, and symbolic representations to add and subtract with sums to 20. | • Build on students' experience with the following skills:<br>○ Give students multiple opportunities to add and subtract within 10 using various strategies, counting on, counting back, doubles, doubles +1, number lines, etc...<br>○ Model how to start with a group of ten and then count on to add.<br>○ Model how to start with the whole and count back to subtract.<br>○ Recognize that +1 means the next number and that +2 means the next-next number in the counting sequence.<br>○ Recognize the -1 means the number before and that -2 means the number that is two numbers before in the counting sequence.<br>○ Emphasizing that efficiently means to solve quickly and correctly, for instance using x's and o's for drawings and not using detailed drawings to solve.<br><br>• Cognitive Strategies<br>○ Repeatedly model the strategies<br>○ Monitor the students' use of the strategies<br>○ Provide feedback to students<br>○ Teach self-questioning and self-monitoring strategies<br>○ Introduce multiple means of |

| | | |
|---|---|---|
| | | representation for mathematical ideas<br><br>● Encourage students to use alternative tools to better access the grade level content. Examples include:<br>○ Digital or hands on manipulatives: two colored counters, linking cubes, base ten blocks, bears, ten frame counters, beans, straws, subitizing cards, beads, number bonds, dice, dominoes, playing cards, etc...<br>○ 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? | For example, students may benefit from re-engaging with content during a unit on add and subtract within 20 by critiquing student approaches/solutions to make connections through a short mini-lesson because students need to know that counting objects leads to the total number of objects given. This is a foundational skill to adding numerical amounts. |
| Intensive | What assessment data will help identify content needing to be revisited for intensive interventions? | For example, some students may benefit from intensive extra time during and after a unit on add and subtract within 20 by addressing conceptual understanding because they need to connect the idea of counting objects in groups and adding to what they have already counted without starting from 1. |
| **Extension** | | |
| ***Essential Question*** | | ***Examples*** |
| What type of extension will offer additional challenges to ‘broaden’ your student’s knowledge of the mathematics developed within your HQIM? | | For example, some learners may benefit from an extension such as the opportunity to understand concepts more quickly and explore them in greater depth than other students when studying adding and subtracting within 20 because students may be ready for |

| | |
|---|---|
| | larger numbers by using units of 10 or previously learned strategies. This is also related to the next standard in the progression. |

| *CCSS Domain* | *CCSS Cluster* |
|---|---|
| **Operations and Algebraic Thinking** | **Work with addition and subtraction equations.** |

## Culturally and Linguistically Responsive Instruction

| | | |
|---|---|---|
| **Relevance to Families and Communities** | During a unit focused on work with addition and subtraction equations, 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, Continue to practice adding and subtracting within 20 or Practice "counting on" as a strategy for addition, e.g. if you have 7 LEGO pieces, and then you get 3 more, encourage your student to start with the number 7 and count "8...9...10" to find the total. Discuss various ways to take apart a given number, e.g. 6 is made of 1 and 5, 2 and 4, 3 and 3, etc. | |
| **Cross-Curricular Connections** | Language Arts: Literature can offer connections to help students find the unknown in various positions in addition and subtraction equations such as: *Safari Park* by Stuart J. Murphy.<br><br>Physical Education: Keeping score during a team game can offer connections to help students understand that equal means the "same as" or "tied". Basketball, football or another game where the total number of points could be scored in a variety of different ways (e.g. 2 touchdowns + 1 safety = 2 touchdowns + 2 conversions) is especially helpful in developing this idea. | |
| **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* | • Supporting Productive Struggle in Learning Mathematics: The standard for mathematical practice, makes sense of mathematics and persevere in solving them is the foundation for supporting productive struggle in the mathematics classroom. "Too frequently, historically marginalized students are overrepresented in classes that focus on memorizing and practicing procedures and rarely provide opportunities for students to think and figure things out for themselves. When students in these classes struggle, the teacher often tells them what to |

| | | |
|---|---|---|
| | *and languages?*<br>• *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?* | do without building their capacity for persistence." Teachers need to provide tasks that challenge students and maintain that challenge while encouraging them to persist. This encouragement or "warm-demander" requires a strong relationship with students and an understanding of the culture of the students. For example, when studying work with addition and subtraction equations. Supporting productive struggle is critical because when solving addition and subtraction students need consistent fluency practice without a lot of guidance from teachers. Allowing them to productively struggle with these equations will encourage perseverance no matter the culture of the student. |

# Planning for Multi-Layered System of Supports

## Vertical Alignment

| *Previous Learning* | *Current Learning* | *Future Learning* |
|---|---|---|
| • Connect to comparing the number of objects in one group to the number of objects in another group to decide if they are equal, as well as comparing two written numbers between 1 and 10 and discussing if they are equal. **(K.CC.6-7)** | • Connect to changing the structure of problems (e.g., changing a subtraction problem to an addition problem) and being flexible with the position of unknowns and the location of the equal sign in equations (e.g., 5 + 4 = 9 or 9 = 5 + 4) **(1.OA.3-4)** | • Connect writing equations to express equivalent groups and the ideas of even numbers, equal parts, skip counting, etc. **(2.OA.3-4)**<br>• Connect to writing equations to solve word problems. **(2.OA.1)**<br>• Connect to thinking about inequalities and students continuing to use their understanding of the equal sign. **(1.NBT.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 work with addition and subtraction equations because OA.D is a new concept for first graders there are no kindergarten standards that link to it, therefore going into detail about what an equal sign is and the importance of it, is very important for a deep understanding. |
| Intensive | *What critical understandings will prepare students to access the mathematics for this cluster?* | 1.OA.D.7: This standard provides a foundation for work with addition and subtraction equations because first graders are introduced to this standard for the first time in first grade and in order to be successful in the rest of their computing careers in school they need to master this first skill of understand the meaning of the equal sign, and determine if equations involving addition and subtraction are true or false. 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 equal sign (=) means “same as”.<br>• The equal sign can be located anywhere in the equation.<br>• The meaning of true and false and how to use this language to categorize equations. | • Make addition and subtraction equations true by naming the unknown (in any position).<br>• Compare quantities using the equal sign.<br>• Explain how they found the unknown value in an equation. | • Build on students’ experience with the following skills:<br>  ○ Using a student balance and objects model that the number of objects on each side are equal which also means the same as balanced.<br>  ○ Explain that equal means the same as the word “is”.<br>  ○ Represent equal quantities<br>  ○ Give examples of what is true and what is false to build understanding of vocabulary.<br>  ○ Model or think aloud how to determine if an equation is true or false.<br><br>• Cognitive Strategies<br>  ○ Repeatedly model the strategies<br>  ○ Monitor the students’ use of the |

| | | |
|---|---|---|
| | | strategies<br>○ Provide feedback to students<br>○ Teach self-questioning and self-monitoring strategies<br>○ Introduce multiple means of representation for mathematical ideas<br><br>● Encourage students to use alternative tools to better access the grade level content. Examples include:<br>○ Digital or hands on manipulatives: two colored counters, linking cubes, base ten blocks, bears, ten frame counters, beans, straws, subitizing cards, beads, number bonds, dice, dominoes, playing cards, student balance etc...<br>○ 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? | For example, students may benefit from re-engaging with content during a unit on work with addition and subtraction equations by critiquing student approaches/solutions to make connections through a short mini-lesson because in order for students to truly be successful in addition or subtraction fluidly they need to be proficient in understanding what the equal sign means and be able to solve. |
| Intensive | What assessment data will help identify content needing to be revisited for intensive interventions? | For example, some students may benefit from intensive extra time during and after a unit work with addition and subtraction equations by helping students move from specific answers to generalizations for certain types of problems because students should solve addition and subtraction equations with different structures so that they are able to see the connections between addition and subtraction more easily. Examples should be presented with the sum or difference on either side of the equal sign in order to dispel the notion that it means "compute." |

| **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 application of and development of abstract thinking skills when studying work with addition and subtraction equations. As students become more fluent with adding and subtracting, they will need to be able to solve equations regardless of the position of the equal sign. |

NEW MEXICO
Public Education Department

# New Mexico Instructional S
# 1st Grade 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
Public Education Department

# New Mexico Instructional S
# 1st Grade Geometry G

| 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

- Reason with shapes and their attributes.
  - 1.G.A.1
  - 1.G.A.2
  - 1.G.A.3

NEW MEXICO
Public Education Department

New Mexico Instructional S
1st Grade Geometry G

| Grade | CCSS Domain | CCSS Cluster |
|---|---|---|
| 1 | Geometry | Reason with shapes and their attributes. |

## Cluster Standard: 1.G.A.1

| Standard | Standards for Mathematical Practice |
|---|---|
| Distinguish between defining attributes (e.g., triangles are closed and three-sided) versus non-defining attributes (e.g., color, orientation, overall size); build and draw shapes to possess defining attributes. | • **SMP 6:** Attend to precision.<br>• **SMP 7:** Look for and make use of structure. |
| **Clarification Statement** | **Students Who Demonstrate Understanding Can...** |
| • [Students] differentiate between **geometrically defining attributes** (e.g., "**hexagons** have six **straight sides**") and **non defining attributes** (e.g., color, overall **size**, or **orientation**). For example, they might say of this **shape**, "This must go with the **squares**, because all four sides are the **same**, and these are **square corners**. It doesn't matter which way it's turned" (MP3, MP7). They explain why the variants shown earlier (p. 6) are members of familiar shape **categories** and why the difficult distractors are not, and they draw examples and nonexamples of the shape categories (MP7, MP8). | • Explain the difference between defining attributes (e.g., sides, angles, faces) and non-defining attributes (e.g., color, orientations, overall size).<br>• Identify two-dimensional shapes including rectangles, squares, trapezoids, triangles, half-circles, and quarter-circles.<br>• Identify three-dimensional shapes cubes, right rectangular prisms, right circular cones, and right circular cylinders.<br>• Construct and draw a shape when given defining attributes. |
| **DOK** | **Blooms** |
| 1-2 | Remember, Apply, and Analyze |

NEW MEXICO
Public Education Department

New Mexico Instructional S
1st Grade Geometry G

| Grade | CCSS Domain | CCSS Cluster |
|---|---|---|
| 1 | Geometry | Reason with shapes and their attributes. |

## Cluster Standard: 1.G.A.2

| Standard | Standards for Mathematical Practice |
|---|---|
| Compose two-dimensional shapes (rectangles, squares, trapezoids, triangles, half-circles, and quarter-circles) or three-dimensional shapes (cubes, right rectangular prisms, right circular cones, and right circular cylinders) to create a composite shape, and compose new shapes from the composite shape. | • **SMP 1:** Make sense of problems and persevere in solving them.<br>• **SMP 5:** Use appropriate tools strategically. |
| **Clarification Statement** | **Students Who Demonstrate Understanding Can...** |
| From the early beginnings of informally matching shapes and **solving** simple shape puzzles, students learn to intentionally **compose** and **decompose plane** and **solid figures** (e.g., putting two **congruent isosceles triangles** together with the explicit purpose of making a **rhombus**), building understanding of **part-whole relationships** as well as the **properties** of the original and **composite shapes**. In this way, they learn to perceive a combination of shapes as a single new shape (e.g., recognizing that two isosceles triangles can be combined to make a rhombus, and simultaneously seeing the rhombus and the two triangles). | • Create new shapes using two-dimensional and/or three-dimensional shapes.<br>• Identify the name of the composite shape as well as the names of each shape that forms it.<br>• Solve shape puzzles, create shape designs, and maintain a shape as a unit. |
| **DOK** | **Blooms** |
| 2-3 | Apply, Analyze, and Create |

| Grade | CCSS Domain | CCSS Cluster |
|---|---|---|
| 1 | Geometry | Reason with shapes and their attributes. |

## Cluster Standard: 1.G.A.3

| Standard | Standards for Mathematical Practice |
|---|---|
| Partition circles and rectangles into two and four equal shares, describe the shares using the words *halves*, *fourths*, and *quarters*, and use the phrases *half of*, *fourth of,* and *quarter of*. Describe the whole as two of, or four of the shares. Understand for these examples that decomposing into more equal shares creates smaller shares. | • **SMP 6:** Attend to precision.<br>• **SMP 7:** Look for and make use of structure. |
| **Clarification Statement** | **Students Who Demonstrate Understanding Can...** |
| | • Partition (divide) a circle and rectangle into two and four equal parts.<br>• Describe the equal parts of a circle and rectangle with words (halves, fourths, and quarters).<br>• Describe the whole by the number of equal parts (e.g., two halves make a whole).<br>• Explain the more equal parts of a circle or rectangle, the smaller the parts. |
| **DOK** | **Blooms** |
| 1-2 | Understand, Apply, and Analyze |

## Common Misconceptions

| | |
|---|---|
| • Students may find the terms closed and unclosed (open) confusing.<br>• Students may have difficulty visualizing or filling in shape puzzles. | • Students may believe the size of the shares is directly related to the number of shares. For example, since there are four fourths in a whole and only two halves in a whole, fourths must be bigger. |

# ASSESSMENT GUIDE

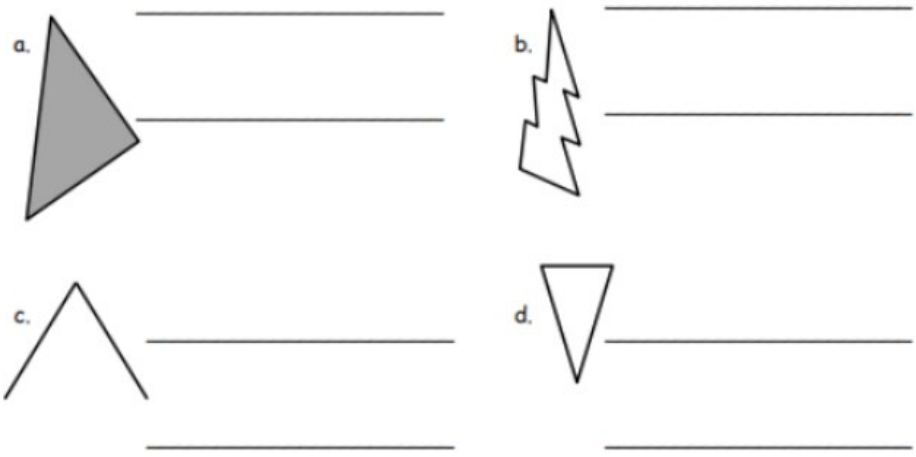
- Reason with shapes and their attributes.

| *Grade* | *CCSS Domain* | *CCSS Strand* |
|---|---|---|
| 1 | Geometry | Reason with shapes and their attributes. |

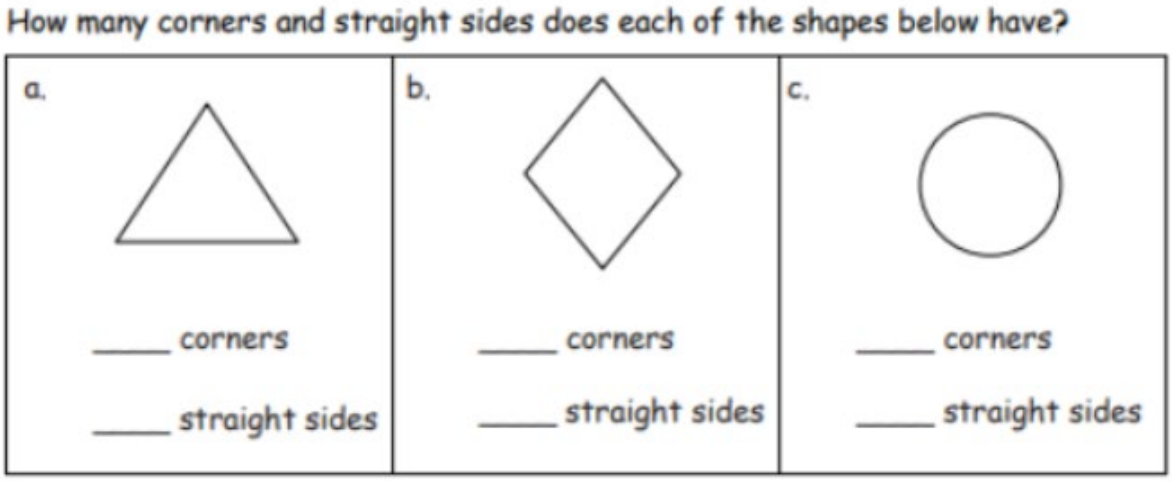
**Sample Task #1 (Constructed Response)**

Is the shape a triangle?

If it is, write YES on the line. If it is not, explain why it is not a triangle on the line.




**Sample Task #2 (Multiple Choice)**




# MLSS AND CLR GUIDE

- Reason with shapes and their attributes.

| *CCSS Domain* | *CCSS Cluster* |
|---|---|
| Geometry | Reason with shapes and their attributes |

## Culturally and Linguistically Responsive Instruction

| | |
|---|---|
| **Relevance to Families and Communities** | During a unit focused on reasoning about shapes and their 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, identify 2D and 3D shapes found at home, in the community, and in nature. Identify the shapes of culturally significant places or even items in the world, what shapes make up that structure/item or that you can derive from the structure. Ex. The Pentagon: what shape is it, and what shapes can you make from it? Pyramids: what shapes are they; what shapes make up the pyramids? How are these different from the Temples in South America? Making connections between the world outside of school and the math classroom. Traffic signs such as a stop sign. Shapes in nature, including a turtle shell and honeycomb. |
| **Cross-Curricular Connections** | Social Studies: In first grade the New Mexico Social Studies Standards state students should “identify and compare celebrations and events from the United States, Mexico, and Canada”. Consider providing a connection for students to create images to represent |

| | | |
|---|---|---|
| | different celebrations and events using only shapes that combine to form the larger image.<br><br>Language Arts: Literature can offer connections to help students begin to understand part-whole relationships such as: *Give Me Half* by Stuart J. Murphy and *Picture Pie* by Ed Emberley. | |
| **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?*<br>• *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 reasoning about shapes and their attributes the use of mathematical representations within the classroom is critical because promoting collaborative teaching and learning with student-to-student and student-to-teacher dialogues to encourage students' participation. For example, a teacher might plan "turn and talks" during a math lesson to help students discuss their understanding of the content using appropriate terminology. |

## Planning for Multilayered System of Supports

**Vertical Alignment**

| *Previous Learning* | *Current Learning* | *Future Learning* |
|---|---|---|
| • Connect to naming regular shapes (squares, circles, rectangles, triangles, hexagons, cubes, cones, cylinders and spheres) and | • Connect to telling and writing time to the hour and to the half-hour and thinking about equality, including the idea of equal shares. **(1. MD.3)** | • Connect to working with shapes, drawing and analyzing shapes with a given number of angles and faces and identifying triangles, |

| | | |
|---|---|---|
| analyzing and comparing these shapes using formal and informal language. **(K.G.1-3)**<br>● Connect to composing simple shapes to form larger shapes. **(K.G.6)** | | quadrilaterals, hexagons and cubes. **(2.G.1)**<br>● Connect to partitioning shapes into equal shares, adding in thirds and deepening understanding of part and whole relationship by stating that a whole can be made up of three thirds, four fourths, etc. and that the equal shares of identical whole parts do not have to be the same shape. **(2.G.2-3)** |

**Suggested Instructional Strategies**

**Pre-Teach**

| ***Level of Intensity*** | ***Essential Question*** | ***Examples*** |
|---|---|---|
| Targeted | *What pre-teaching will prepare students to productively struggle with the mathematics for this cluster within your HQIM?* | For example, some learners may benefit from targeted pre-teaching that rehearses new mathematical language when studying reasoning about shapes and their attributes because students are being introduced to new language that is connected to shapes, such as partition, fourths, halves, and quarters. Rehearsing the new language prior to teaching the concepts will allow students to have the opportunity to be exposed to it prior to it being taught to them. |
| Intensive | *What critical understandings will prepare students to access the mathematics for this cluster?* | K.G.B.4: This standard provides a foundation for work with reasoning about shapes and their attributes because students have been exposed to analyzing and comparing shapes according to their 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? | For example, students may benefit from re-engaging with content during a unit on reasoning about shapes and their attributes by revisiting student thinking through a short mini-lesson because students might not have a strong understanding of the various types of attributes the different shapes have. Also, students might need to be exposed to partitioning shapes into fourths, halves and quarters as this is a new concept for 1st graders. |
| Intensive | What assessment data will help identify content needing to be revisited for intensive interventions? | For example, some students may benefit from intensive extra time during and after a unit reasoning about shapes and their attributes by confronting student misconceptions because students might be confused on the various types of attributes of the shapes. Also, students may have misconceptions on how to partition shapes into halves, fourths and quarters depending on the wording that is used. |

| Extension | |
|---|---|
| ***Essential Question*** | ***Examples*** |
| What type of extension will offer additional challenges to 'broaden' your student's knowledge of the mathematics developed within your HQIM? | For example, some learners may benefit from an extension such as open-ended tasks linking multiple disciplines when studying reasoning about shapes and their attributes because students can get a deeper understanding of shapes and partitioning shapes when working with an open-ended task. |

NEW MEXICO
Public Education Department

New Mexico Instructional Scope

# 1st Grade Measurement and Data 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

NEW MEXICO
Public Education Department

New Mexico Instructional Scope

# 1st Grade Measurement and Data Guide

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

## Standards Breakdown

- Measure lengths indirectly and by iterating length units.
  - 1.MD.A.1
  - 1.MD.A.2
- Tell and write time.
  - 1.MD.B.3
- Represent and interpret data.
  - 1.MD.C.4

| *Grade* | *CCSS Domain* | *CCSS Cluster* |
|---|---|---|
| **1** | **Measurement and Data** | **Measure lengths indirectly and by iterating length units.** |

## Cluster Standard: 1.MD.A.1

| **Standard** | **Standards for Mathematical Practice** |
|---|---|
| Order three objects by length; compare the lengths of two objects indirectly by using a third object. | • **SMP 6:** Attend to precision.<br>• **SMP 7:** Look for and make use of structure. |
| **Clarification Statement** | **Students Who Demonstrate Understanding Can...** |
| • This standard focuses on the property of **transitivity**: If A is longer than B and B is longer than C, then A must be longer than C as well. Students will revisit this idea in future grades. Students should apply the principle of transitivity of measurement to make indirect comparisons of the length of objects, but they need not use this technical term. | • Identify which of two objects is longer or shorter.<br>• Order three objects by length (longest to shortest or shortest to longest).<br>• Decide how the lengths of two objects relate to one another by comparing them both to a third object (e.g. the crayon is shorter than the pencil because it is shorter than the marker and the marker is shorter than the pencil). |
| **DOK** | **Blooms** |
| 2-3 | Analyze and Evaluate |

| 1 | Measurement and Data | Measure lengths indirectly and by iterating length units. |
|---|---|---|

## Cluster Standard: 1.MD.A.2

| Standard | Standards for Mathematical Practice |
|---|---|
| Express the length of an object as a whole number of length units, by laying multiple copies of a shorter object (the length unit) end to end; understand that the length measurement of an object is the number of same-size length units that span it with no gaps or overlaps. *Limit to contexts where the object being measured is spanned by a whole number of length units with no gaps or overlaps.* | • **SMP 5:** Use appropriate tools strategically.<br>• **SMP 6:** Attend to precision. |
| **Clarification Statement** | **Students Who Demonstrate Understanding Can...** |
| • Measuring length or distance consists of two aspects, choosing a **unit** of measure and subdividing (mentally and physically) the object by that unit, placing that unit end to end (**iterating**) alongside the object. The **length** of the object is the number of units required to iterate from one end of the object to the other, without gaps or overlaps. | • Illustrate how to use multiple copies of shorter objects to find the length of a longer object.<br>• Connect the length of the longer object to the total number of shorter objects used and express the length of the longer object as the whole number of shorter objects used.<br>• Describe why gaps and overlaps are not allowed when measuring the length of an object. |
| **DOK** | **Blooms** |
| 1-2 | Knowledge, Understand, and Apply |

NEW MEXICO
Public Education Department

New Mexico Instructional Scope
**1st Grade Measurement and Data Guide**

| *Grade* | *CCSS Domain* | *CCSS Cluster* |
|---|---|---|
| **1** | **Measurement and Data** | **Tell and write time.** |

## Cluster Standard: 1.MD.B.3

| **Standard** | **Standards for Mathematical Practice** |
|---|---|
| Tell and write time in hours and half-hours using analog and digital clocks. | • **SMP 7:** Look for and make use of structure.<br>• **SMP 8:** Look for and express regularity in repeated reasoning. |
| **Clarification Statement** | **Students Who Demonstrate Understanding Can...** |
| Students need to experience a progression of activities for learning how to tell time from a one-handed **clock** to tell time in **hour** and **half-hour** intervals to clocks with the hour and minute **hand**. Students should also make connections between **di gital** and **analog** clocks. | • Identify the difference between an analog and digital clock.<br>• Identify the hour and minute hand on an analog clock.<br>• Remember how many minutes are in an hour and a half-hour.<br>• Observe time to the hour and half-hour.<br>• Write the time in hours and half-hours when given a time verbally.<br>• Draw hands on a clock to show a given time in hours and half-hours.<br>• Relate time on both digital and analog clocks.<br>• Explain what "o'clock" and "thirty" mean. |
| **DOK** | **Blooms** |
| 1 | Remember and Understand |

NEW MEXICO
Public Education Department

New Mexico Instructional Scope
**1st Grade Measurement and Data Guide**

| *Grade* | *CCSS Domain* | *CCSS Cluster* |
|---|---|---|
| **1** | **Measurement and Data** | **Represent and interpret data.** |

## Cluster Standard: 1.MD.C.4

| **Standard** | **Standards for Mathematical Practice** |
|---|---|
| Organize, represent, and interpret data with up to three categories; ask and answer 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. | • **SMP 2:** Reason abstractly and quantitatively.<br>• **SMP 4:** Model with mathematics.<br>• **SMP 6:** Attend to precision. |
| **Clarification Statement** | **Students Who Demonstrate Understanding Can...** |
| • Students' **data** work in Grade 1 has important connections to **addition** and **subtraction**. Students in grade 1 can ask and answer questions about **categorical data** based on a **representation** of the data. Students can also ask and answer questions leading to other kinds of addition and subtraction problems (1. OA), such as **comparing problems** or problems involving the addition of three numbers (for situations with three categories).<br>• There is no single correct way to represent categorical data-and the Standards do not require Grade 1 students to use any specific format. However, students should be familiar with **mark schemes** like the one shown in the figure. Another format that might be useful in Grade 1 is a **picture graph** in which one picture represents one object. (Note that picture graphs are not an expectation in the Standards until Grade 2.) | • Organize a given data set with up to three categories into a chart or other display.<br>• Ask and answer questions about data points.<br>• Compare data from up to three categories. |
| **DOK** | **Blooms** |
| 2, 3 | Apply, Analyze and Evaluate |

## Common Misconceptions

- Students may incorrectly read or record data when transferring between different displays.
- Students may pose a question that is too open-ended or has too many choices.
- Students may not collect data from more than one person to answer the questions.

## Student Discourse Guide

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

| Domain: **Measurement and Data** | Strand: **Measure lengths indirectly and by iterating length units.** |
|---|---|

## Suggested Student Discourse Questions

- How do you know the object is longer than a pencil? How do you know the object is shorter than a marker?
- Tell your partner how you know an object is longer or shorter than something else?
- Compare the length of objects found at a student's desks.
- Explain how (students name) ordered the objects by length.

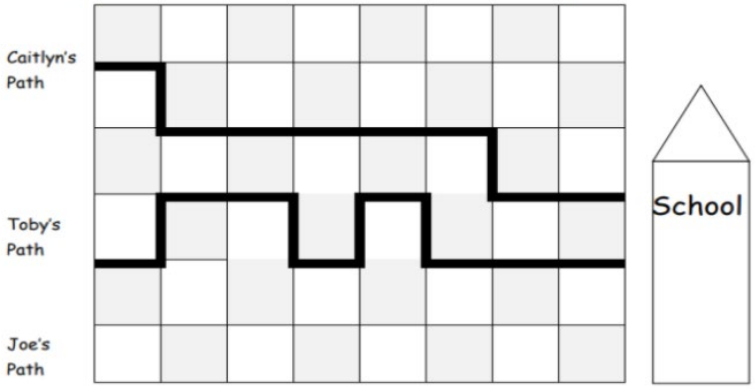
# ASSESSMENT GUIDE

- Measure lengths indirectly and by iterating length units
- Tell and write time
- Represent and interpret data

| *Grade* | *CCSS Domain* | *CCSS Strand* |
|---|---|---|
| **1** | **Measurement and Data** | **Measure lengths indirectly and by iterating length units.** |

**Sample Task #1 (Constructed Response)**

Use the picture to answer the questions about the students' paths to school.



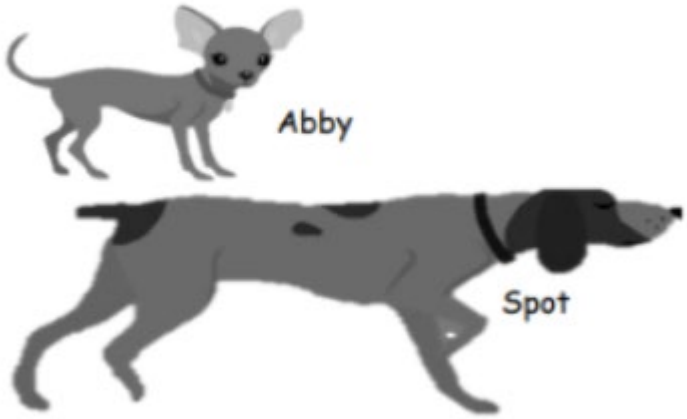

a. How long is Caitlyn's path to school? _____ blocks

b. How long is Toby's path to school? _____ blocks

c. Joe's path is shorter than Caitlyn's. Draw Joe's path.

**Sample Task #2**

Write the words **longer than** or **shorter than** to make the sentences true.

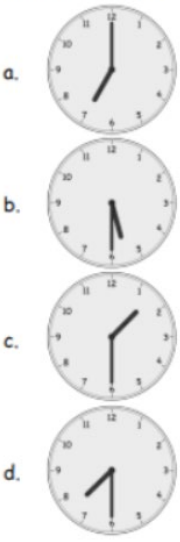



Abby is _____ Spot.

| *Grade* | *CCSS Domain* | *CCSS Strand* |
|---|---|---|
| **1** | **Measurement and Data.** | **Tell and write time.** |

**Sample Task #1 (Constructed Response)**

Match the clocks.



| | | |
|---|---|---|
| a. | half past 7 | 7:30 |
| b. | half past 1 | 7:00 |
| c. | 7 o'clock | 5:30 |
| d. | half past 5 | 1:30 |

**Sample Task #2**

Circle the correct clock.

1. Half past 2 o'clock

a. 

b. 

c. 

| *Grade* | *CCSS Domain* | *CCSS Strand* |
|---|---|---|
| **1** | **Measurement and Data.** | **Represent and interpret data.** |

**Sample Task #1 (Constructed Response)**

A class collected the information in the chart below. Students asked each other: Among stuffed animals, toy cars, and blocks, which is your favorite toy?

Then, they organized the information in this chart.

| Toy | Number of Students |
|---|---|
| Stuffed Animals | 11 |
| Toy Cars | 5 |
| Blocks | 13 |

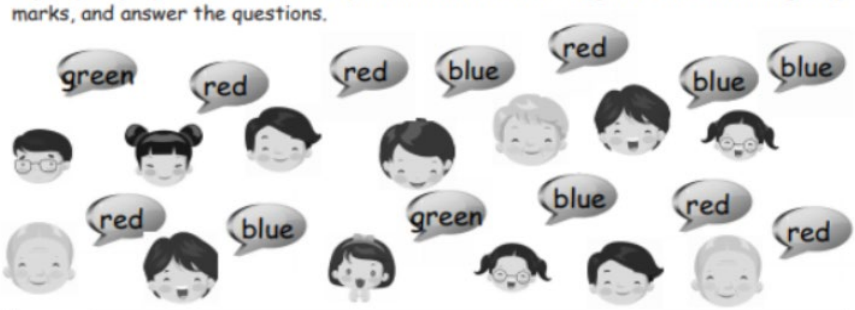
a. How many students chose toy cars? _____

b. How many more students chose blocks than stuffed animals? _____

c. How many students would need to choose toy cars to equal the number of students who chose blocks? _____

**Sample Task #2 (Multiple Choice)**

A group of people were asked to say their favorite color. Organize the data using tally marks, and answer the questions.




| | |
|---|---|
| Red | |
| Green | |
| Blue | |

Which color received the least amount of votes? _____

## MLSS AND CLR GUIDE

- Measure lengths indirectly and by iterating length units
- Tell and write time
- Represent and interpret data

| *CCSS Domain* | *CCSS Cluster* |
|---|---|
| **Measurement and Data** | **Measure lengths indirectly and by iterating length units** |

## Culturally and Linguistically Responsive Instruction

| | |
|---|---|
| **Relevance to Families and Communities** | During a unit focused on measure lengths indirectly and by iterating length unit, 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, order family members as tallest to shortest of shortest to tallest, give your student many opportunities to measure objects using other, smaller objects, e.g., "How many Lego pieces long is your book? How many blueberries end to end measure the length of this notebook?" |

| | | |
|---|---|---|
| **Cross-Curricular Connections** | Science: In first grade the NGSS recommend studying light, transparency, and shadows. Consider providing a connection for students to order the lengths of the shadows of various items.<br><br>Social Studies: A map and strings is often used to track Flat Stanley's travels (*Flat Stanley* by Jeff Brown). Consider providing a connection for students to measure and/or compare the lengths of the strings. | |
| **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?*<br>• *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?* | • 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 measure lengths indirectly and by iterating length units the types of mathematical tasks are critical because it will allow students to measure using different tools that may be associated with their culture. They could also measure various objects that are important to their culture. For example, having students bring in an item that may be pertinent in their family such as native jewelry or sombrero etc. |

# Planning for Multi-Layered System of Supports

**Vertical Alignment**

| ***Previous Learning*** | ***Current Learning*** | ***Future Learning*** |
|---|---|---|
| • Connect to describing measurable attributes of objects, such as length **(K.MD.1)** | • Connect to non-standard objects and more standard measurement tools to help students state length units in whole numbers and make | • Connect to making decisions about the tool's students use to measure the length of an object by selecting and using |

| | | |
|---|---|---|
| • Connect to directly comparing two objects with a measurable attribute in common, to see which object has "more of/less of" the attribute and describing the difference. For example, directly comparing the heights of two children and describing one child as taller/shorter. **(K.MD.2)** | direct and indirect comparisons of objects. | tools such as a yardstick, meter stick, rulers, tape measures, etc. **(2. MD.1)**<br>• Connect to measuring to determine how much longer one object is than another and expressing the length difference in terms of a standard-length unit **(2. 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 rehearses prior learning when studying measure lengths indirectly and by iterating length units. In kindergarten children are exposed to comparing objects based on attributes, referring to this will help students understand measurement by noticing how long or short something is. |
| Intensive | *What critical understandings will prepare students to access the mathematics for this cluster?* | This standard provides a foundation for work with measure lengths indirectly and by iterating length units because 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 the 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. 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*** |
| • How to make direct comparisons between two objects such as finding objects that are the same length, longer than, or shorter than.<br>• The length of an object is the number of same-size length units that span it with no gaps end to end.<br>• The smaller the unit, the more units will be needed to measure an object. | • Order three objects by length.<br>• Compare the lengths of the two objects indirectly by using a third object.<br>• Measure items with different sizes of nonstandard units.<br>• State the length of the object with a whole number (representing the number or units). | • Build on students' experience with the following skills:<br>  ○ Identify which of two objects is longer or shorter.<br>  ○ Order three objects by length (longest to shortest or shortest to longest).<br>  ○ Decide how the lengths of two objects relate to one another by comparing them both to a third object (e.g. the crayon is shorter than the pencil because it is shorter than the marker and the marker is shorter than the pencil).<br>• Cognitive Strategies<br>  ○ Repeatedly model the strategies<br>  ○ Monitor the students' use of the strategies<br>  ○ Provide feedback to students<br>  ○ Teach self-questioning and self-monitoring strategies<br>  ○ Introduce multiple means of representation for mathematical ideas<br>• Encourage students to use alternative tools to better access the grade level content. Examples include:<br>  ○ Digital or hands on manipulatives: linking cubes, objects in desk, cuisenaire rods, paper clips, strips of paper, index cards, etc…<br>  ○ 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? | For example, students may benefit from re-engaging with content during a unit on measure lengths indirectly and by iterating length units by examining tasks from a different perspective through a short mini-lesson because sometimes students may need to be taught in a different way. To realize that arbitrary (and especially mixed size) units result in the same length being described by different numbers, a student must reconcile the varying lengths and numbers of arbitrary units. |
| Intensive | What assessment data will help identify content needing to be revisited for intensive interventions? | For example, some students may benefit from intensive extra time during and after a unit on measuring lengths indirectly and by iterating length units by confronting student misconceptions because children should engage in experiences that allow them to connect number to length, using manipulative units that have a standard unit of length, such as centimeter cubes. These can be labeled "length-units" with the students. Students learn to lay such physical units end-to-end and count them to measure a length. They compare the results of measuring to direct and indirect comparisons. |
| **Extension** | | |
| ***Essential Question*** | | ***Examples*** |
| What type of extension will offer additional challenges to 'broaden' your student's knowledge of the mathematics developed within your HQIM? | | For example, some learners may benefit from an extension such as the opportunity to explore links between various topics when studying measure lengths indirectly and by iterating length unit because measurement can be used across multiple areas and allowing students to connect this way will help them deepen their understanding. |

NEW MEXICO
Public Education Department

New Mexico Instructional Scope
**1st Grade Measurement and Data Guide**

| *CCSS Domain* | *CCSS Cluster* |
|---|---|
| **Measurement and Data** | **Tell and write time** |

## Culturally and Linguistically Responsive Instruction

| | | |
|---|---|---|
| **Relevance to Families and Communities** | During a unit focused on tell and write time, 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, Identify the time frame of favorite TV shows, Identify the length of time for sporting event (break up halves or quarters into time lengths, Discuss with parents the times they do important things during the day (wake-up, go to school, get out of school, eat dinner, go to bed). They can then make a schedule of their day writing the times in analog or digital format. | |
| **Cross-Curricular Connections** | Social Studies: Different map skills are often explored in first grade, including classroom and neighborhood maps. Consider providing a connection for students to read or write times related to visiting different locations on the map.<br><br>Language Arts: Literature can offer connections about measurement such as: *The Grouchy Ladybug* 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?*<br>• *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* | • Facilitating Meaningful Mathematical Discourse: Mathematics discourse requires intentional planning to ensure all students feel comfortable to share, consider, build upon and critique the mathematical ideas under consideration. When student ideas serve as the basis for discussion, we position them as knowers and doers of mathematics by using equitable talk moves students and attending to the ways students talk about who is and isn't capable of mathematics, we can disrupt the negative images and stereotypes around mathematics of marginalized cultures and languages. "A discourse-based mathematics classroom provides stronger access for every student — those who have an immediate answer or approach to share, those who have begun to formulate a mathematical approach to a task but have not fully developed their thoughts, and those who may not have an approach but can provide feedback to others." For example, when studying tell and write time facilitating meaningful mathematical discourse is critical because telling time is an abstract skill requiring students to be able to count, determine the meaning between hours and minutes |

| | | |
|---|---|---|
| | *mathematicians that can use mathematics within school and society?* | and knowing all the required vocabulary to make sense of the clock, allowing discussion around this will allow for misunderstandings to be cleared and peer to peer. |

# Planning for Multi-Layered System of Supports

## Vertical Alignment

| *Previous Learning* | *Current Learning* | *Future Learning* |
|---|---|---|
| • Connect to the fact that while Kindergarten does not have specific standards for time, over the course of a day they are exposed to concepts of time such as the morning, or afternoon, etc. | • Connect telling time to the nearest half-hour to partition circles into halves. **(1.G.3)** | • Connect to telling and writing time from analog and digital clocks to the nearest five minutes, using a.m. and p.m. **(2. MD.7)**<br>• Connect to telling and writing time to the nearest minute and measure time intervals in minutes. Connect to solving word problems involving addition and subtraction of time intervals in minutes, for example, by representing the problem on a number line diagram. **(3. MD.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 tell and write time because when learning how to tell time to the hour and half hour students need to know the proper language and vocabulary attached to accurately tell time. |
| Intensive | *What critical understandings will prepare students to access the mathematics for* | 1.MD.B.3: This standard is the foundation for work with tell and write time because telling time to the hour and half hour in first grade is an additional cluster and is |

| | | |
|---|---|---|
| | *this cluster?* | introduced in first grade to continue work in 2nd grade. If students have unfinished learning within this standard, based on assessment data, consider ways to provide intensive pre-teaching support prior to the start of the unit to ensure students are ready to access grade level instruction and assignments. |
| **Re-Teach** | | |
| ***Level of Intensity*** | ***Essential Question*** | ***Examples*** |
| Targeted | What formative assessment data (e.g., tasks, exit tickets, observations) will help identify content needing to be revisited during a unit? | For example, students may benefit from re-engaging with content during a unit on tell and write time by clarifying mathematical ideas and/or concepts through a short mini-lesson because when telling time in first grade they frequently misinterpret how the numbers on the clock are supposed to be read. Therefore, re-teaching this skill in a small group will benefit them, providing a lot of time for practice. |
| Intensive | What assessment data will help identify content needing to be revisited for intensive interventions? | For example, some students may benefit from intensive extra time during and after a unit tell and write time by confronting student misconceptions because students frequently misinterpret the numbers on the clock. They may say it is two, six; instead of two thirty. Giving students more time for practice will help clear up these misconceptions. |
| **Extension** | | |
| ***Essential Question*** | | ***Examples*** |
| What type of extension will offer additional challenges to 'broaden' your student's knowledge of the mathematics developed within your HQIM? | | For example, some learners may benefit from an extension such as the opportunity to understand concepts more quickly and explore them in greater depth than other students, when studying telling and writing time because students who already grasp the concept of telling time to the hour and half hour may be ready to explore the connections between time and astronomy. |

NEW MEXICO
Public Education Department

New Mexico Instructional Scope
**1st Grade Measurement and Data Guide**

| *CCSS Domain* | *CCSS Cluster* |
|---|---|
| **Measurement and Data** | **Represent and interpret data** |

## Culturally and Linguistically Responsive Instruction

| | | |
|---|---|---|
| **Relevance to Families and Communities** | During a unit focused on 1.MD.C, represent and interpret data, consider options for learning from your families and communities the cultural and linguistic ways this mathematics exists outside of school to create stronger home to school connections for students, for example, learning about the different structures for the number names across the languages in your classroom can lead to a more robust understanding of number for all students by making connections to the different structures of number-names in other languages. | |
| **Cross-Curricular Connections** | Language Arts: Consider providing an opportunity for students to survey each other regarding the books they are reading (favorite book, favorite character, what do you think will happen next) and then graph and analyze the results.<br><br>Physical Education: Consider providing an opportunity for students to time or count the number of reps they can do for a certain fitness task (sprint, sit-ups, jumping jacks) and then graph and analyze the results. | |
| **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?*<br>• *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* | • 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 the math skill on being able to organize, represent, and interpret data with up to three categories; ask and answer 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 the use of mathematical representations within the |

| | | |
|---|---|---|
| | *mathematicians that can use mathematics within school and society?* | classroom is critical because students are transitioning and learning more representations of math through the use of data and categories. Students may also be utilizing symbols when interpreting data and can even bring in their own symbols related to their culture when creating data. Students can build a bridge between mathematics and culture, along with language as they interpret data and answer questions related to the data and information provided. Also, students can represent not only their learning, but category information as well to make cultural connections and build on this skill. |

# Planning for Multi-Layered System of Supports

## Vertical Alignment

| *Previous Learning* | *Current Learning* | *Future Learning* |
|---|---|---|
| • Connect to classifying objects into given categories and sorting the categories. Connect to counting the number of objects in each category and understanding the relationship between numbers and quantities in order to answer questions about how many up (to 20). **(K.MD.3) (K.CC.3-5)** | • Connect to using addition and subtraction within 20 to solve word problems that may use up to three whole numbers. **(1.OA.1-2)** Using tally marks to represent data collected provides an opportunity to have more practice with groups of tens and ones. | • Connect to representing a data set with up to four categories by drawing a picture graph and a bar graph with single-unit scale. **(2. MD.10)** |

## 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 the skill of being able to organize, represent, and interpret data with up to three categories; ask and answer 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 because students are working with new mathematical vocabulary words that include, category, categories, and data for example. It is important to ensure that students have a clear understanding of these new math terms as they work to solve problems associated with being able to represent and interpret data. |
| Intensive | *What critical understandings will prepare students to access the mathematics for this cluster?* | K.MD.B.3: This standard provides a foundation for work with students being able to classify objects and count the number of objects in each category because it will then set up the foundation of students to be able to count correctly, and associate a given total to a specific category. As students' progress in first grade, they will be expected to work within a maximum of three categories and be able to identify totals, and one more or one less of an amount in any given category. If students have unfinished learning within this standard, based on assessment data, consider ways to provide intensive pre-teaching support prior to the start of the unit to ensure students are ready to access grade level instruction and assignments. |
| **Re-Teach** | | |
| ***Level of Intensity*** | ***Essential Question*** | ***Examples*** |
| Targeted | What formative assessment data (e.g., tasks, exit tickets, observations) will help identify content needing to be revisited during a unit? | For example, students may benefit from re-engaging with content during a unit on being able to organize, represent, and interpret data with up to three categories; ask and answer 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 by clarifying mathematical ideas and/or concepts through a short mini-lesson because students will be able to receive intervention on the skills associated with organizing, representing and interpreting data within up to three categories. This is important because it can clear up any misconception's students may have either associated with the categories or data that are being represented, |

| | | |
|---|---|---|
| | | as well as any mathematical counting errors of one more or one less of a category. |
| Intensive | What assessment data will help identify content needing to be revisited for intensive interventions? | For example, some students may benefit from intensive extra time during and after a unit in which they are able to organize, represent, and interpret data with up to three categories; ask and answer 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 by helping students move from specific answers to generalizations for certain types of problems because students will be exposed to data in multiple ways as they continue with first grade and prepare for second grade concepts. Students gain new understanding that data exists all around them and with cross-curricular topics and can be used to organize data points and information into categories and based on that organization it allows for students to make meaning of data and information while comparing the totals of various categories. |

| **Extension** | |
|---|---|
| ***Essential Question*** | ***Examples*** |
| What type of extension will offer additional challenges to 'broaden' your student's knowledge of the mathematics developed within your HQIM? | For example, some learners may benefit from an extension such as the opportunity to explore links between various topics when studying the skill of being able to organize, represent, and interpret data with up to three categories; ask and answer 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 because this allows students to make connections related to data and connections. When given choice and the opportunity to explore topics of choice related to this mathematical skill, students may be more engaged in the work and in making connections related to the organization and representation of data. Also, students are given the opportunity to see more real-world connections associated with data, categories, recognizing one more or one less and being able to compare categorical values. |

New Mexico Instructional Scope

# 1st Grade Number and Operations in Base Ten 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

New Mexico Instructional Scope

# 1st Grade Number and Operations in Base Ten Guide

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

## Standards Breakdown

- Extend the counting sequence.
  - 1.NBT.A.1
- Understand Place Value.
  - 1.NBT.B.2
  - 1.NBT.B.3
- Use place value understanding and properties to add and subtract.
  - 1.NBT.C.4
  - 1.NBT.C.5
  - 1.NBT.C.6

New Mexico Instructional Scope

# 1st Grade Number and Operations in Base Ten Guide

| *Grade* | *CCSS Domain* | *CCSS Cluster* |
|---|---|---|
| 1 | Number and Operations in Base Ten | Extend the Counting Sequence |

## Cluster Standard: 1.NBT.A.1

| Standard | Standards for Mathematical Practice |
|---|---|
| Count to 120, starting at any number less than 120. In this range, read and write numerals and represent several objects with a written numeral. | • **SMP 6:** Attend to precision.<br>• **SMP 7:** Look for and make use of structure. |
| **Clarification Statement** | **Students Who Demonstrate Understanding Can...** |
| • Students build on their counting to 100 by ones and tens and start a count at any number less than 120 and continue to 120. Students should be able to count and represent their counting in many ways; hundred charts and number lines are useful tools. | • Count to 120.<br>• Count to 120 starting at any number.<br>• Read any number name up to 120.<br>• Write any numeral up to 120.<br>• Label a set of objects up to 120 with a written numeral. |
| **DOK** | **Blooms** |
| 1-2 | Remember and Apply |

## Common Misconceptions

● Students may reverse digits in writing numerals and believe that 24 and 42 have the same value.

New Mexico Instructional Scope

# 1st Grade Number and Operations in Base Ten Guide

| Grade | CCSS Domain | CCSS Cluster |
|---|---|---|
| 1 | Number and Operations in Base Ten | Understand Place Value. |

## Cluster Standard: 1.NBT.B.2

| Standard | Standards for Mathematical Practice |
|---|---|
| Understand that the two digits of a two-digit number represent amounts of tens and ones. Understand the following as special cases:<br>• 1.NBT.B.2.A: 10 can be thought of as a bundle of ten ones — called a "ten."<br>• 1.NBT.B.2.B: The numbers from 11 to 19 are composed of ten and one, two, three, four, five, six, seven, eight, or nine ones.<br>• 1.NBT.B.2.C: The numbers 10, 20, 30, 40, 50, 60, 70, 80, 90 refer to one, two, three, four, five, six, seven, eight, or nine tens (and 0 ones). | • **SMP 4:** Model with mathematics.<br>• **SMP 7:** Look for and make use of structure. |
| **Clarification Statement** | **Students Who Demonstrate Understanding Can...** |
| • More generally, first graders learn that the two **digits** of a **two-digit number** represent amounts of **tens** and **ones**, e.g., 67 represents 6 tens and 7 ones. Saying 67 as "6 tens, 7 ones" as well as "sixty-seven" can help students focus on the tens and ones structure of written **numerals**. | • Represent 10 as ten ones.<br>• Represent numbers 11 to 19 as a ten and some ones.<br>• Represent two-digit numbers using physical tools, drawings, and number names (2 tens is 20, 2 tens and 7 ones is 27).<br>• Explain the value of each digit in a two-digit number (place value).<br>• Locate a two-digit number on a hundred chart and number line. |
| **DOK** | **Blooms** |
| 2 | Apply and Analyze |

New Mexico Instructional Scope

# 1st Grade Number and Operations in Base Ten Guide

| *Grade* | *CCSS Domain* | *CCSS Cluster* |
|---|---|---|
| 1 | Number and Operations in Base Ten | Understand Place Value |

## Cluster Standard: 1.NBT.B.3

| Standard | Standards for Mathematical Practice |
|---|---|
| Compare two two-digit numbers based on meanings of the tens and ones digits, recording the results of comparisons with the symbols >, =, and <. | • **SMP 4:** Model with mathematics..<br>• **SMP 6:** Attend to precision. |
| **Clarification Statement** | **Students Who Demonstrate Understanding Can...** |
| • Grade 1 students use their **base-ten** work to help them recognize that the digit in the **tens place** is more important for determining the size of a two-digit number. Correctly placing the **<** and **>** **symbols** is a challenge for early learners. Accuracy can improve if students think of putting the wide part of the symbol next to the **larger** number. | • Determine when a two-digit number is greater than, less than, or equal to another two-digit number.<br>• Explain why a two-digit number is greater than, less than, or equal to another two-digit number using physical models, hundred charts, number lines, and drawings.<br>• Compare two two-digit numbers using place value understanding.<br>• Record the comparison using the symbols >, <, and =. |
| **DOK** | **Blooms** |
| 2 | Apply and Analyze |

## Common Misconceptions

| | |
|---|---|
| • Students may count tens and ones separately, such as 10, 20, 1, 2, 3 instead of 10, 20, 21, 22, 23. | • Students may not recognize that in two-digit numbers the position of the digit determines its value. |

New Mexico Instructional Scope

# 1st Grade Number and Operations in Base Ten Guide

| Grade | CCSS Domain | CCSS Cluster |
|---|---|---|
| 1 | Number and Operations in Base Ten | Use place value understanding and properties to add and subtract. |

## Cluster Standard: 1.NBT.C.4

| Standard | Standards for Mathematical Practice |
|---|---|
| Add within 100, including adding a two-digit number and a one-digit number, and adding a two-digit number and a multiple of 10, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used. Understand that in adding two-digit numbers, one adds tens and tens, ones and ones; and sometimes it is necessary to compose a ten. | • **SMP 2:** Reason abstractly and quantitatively.<br>• **SMP 4:** Model with mathematics. |
| **Clarification Statement** | **Students Who Demonstrate Understanding Can...** |
| • Students may explain their reasoning by saying that they have **one more** or **one less ten** than before. | • Explain addition within 100 adding a two-digit number and a one-digit number using physical models, drawings, hundred charts, and number lines.<br>• Explain addition within 100 adding a two-digit number and a multiple of ten using physical models, drawings, hundred charts, and number lines.<br>• Explain addition within 100 adding a two-digit number and a two-digit number using physical models, drawings, hundred charts, and number lines.<br>• Use partial sums by decomposing both addends to add within 100.<br>• Use partial sums by decomposing one addend to add within 100.<br>• Explain why a new ten is sometimes made when adding numbers. |

New Mexico Instructional Scope

# 1st Grade Number and Operations in Base Ten Guide

| DOK | Blooms |
|---|---|
| 1-3 | Understand, Apply, Analyze, and Evaluate |

| *Grade* | *CCSS Domain* | *CCSS Cluster* |
|---|---|---|
| 1 | Number and Operations in Base Ten | Use place value understanding and properties to add and subtract. |

## Cluster Standard: 1.NBT.C.5

| Standard | Standards for Mathematical Practice |
|---|---|
| Given a two-digit number, mentally find 10 more or 10 less than the number, without having to count; explain the reasoning used. | • **SMP 3**: Construct viable arguments and critique the reasoning of others.<br>• **SMP 8:** Look for and express regularity in repeated reasoning. |
| **Clarification Statement** | **Students Who Demonstrate Understanding Can...** |
| • Students may explain their reasoning by saying that they have **one more** or **one less ten** than before. | • Determine 10 more and 10 less of any two-digit number using a physical tool, hundred charts, and number lines.<br>• Recall 10 more for any two-digit number (e.g., 32 + 10 = 42) without using a tool or representation.<br>• Recall 10 less for any two-digit number (e.g., 32 - 10 = 22) without using a tool or representation.<br>• Explain why the tens digit changes and why the ones place does not change when finding ten more or ten less. |
| **DOK** | **Blooms** |
| 1-2 | Remember, Understand, Apply, and Analyze |

New Mexico Instructional Scope

# 1st Grade Number and Operations in Base Ten Guide

| *Grade* | *CCSS Domain* | *CCSS Cluster* |
|---|---|---|
| 1 | Number and Operations in Base Ten | Use place value understanding and properties to add and subtract. |

## Cluster Standard: 1.NBT.C.6

| Standard | Standards for Mathematical Practice |
|---|---|
| Subtract multiples of 10 in the range 10-90 from multiples of 10 in the range 10-90 (positive or zero differences), using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used. | • **SMP 3:** Construct viable arguments and critique the reasoning of others.<br>• **SMP 7:** Look for and make use of structure. |
| **Clarification Statement** | **Students Who Demonstrate Understanding Can...** |
| • **Differences** of **multiples** of 10, such as 70 – 40 can be viewed as 7 **tens minus** 4 tens and represented with **concrete models** such as objects **bundled** in tens or drawings. Children use the relationship between **subtraction** and **addition** when they view 80 – 70 as an **unknown addend addition problem**, 70 + <box> = 80, and reason that 1 ten must be **added** to 70 to make 80, so 80 –70 = 10. | • Determine the difference of two multiples of 10 (e.g. 90 - 40) using models, drawings, hundred charts, and number lines.<br>• Subtract a multiple of 10 from a multiple of 10. (e.g., subtract 90 - 40).<br>• Explain the difference between two multiples of 10 by relating it to subtracting the tens digit.<br>• Explain why the ones place does not change when subtracting multiples of 10. |
| **DOK** | **Blooms** |
| 1-2 | Remember, Understand, Apply, and Analyze |

New Mexico Instructional Scope

**1st Grade Number and Operations in Base Ten Guide**

## Common Misconceptions

- Students may subtract the digits in the tens place but ignore the value of the ones place.

## 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: **Number & Operations in Base 10** | Strand: **Understand Place Value** |
|---|---|

## Suggested Student Discourse Questions

- What do the names of the place values mean? (ones, tens) What does it mean when you have greater than, less than or equal to?
- How did (students name) show the number 27 using base ten.
- How many tens and ones are in one dozen eggs?
- Discuss with a partner how many 10s and 1s are in the number 55.

| Domain: **Number & Operations in Base 10** | Strand: **Use place value understanding and** |
|---|---|

NEW MEXICO
Public Education Department

| | |
|---|---|
| | **properties of operations to add and subtract.** |
| **Suggested Student Discourse Questions** | |
| • How can you add 10 more to the number 65? How can you subtract 10 less from the number 65?<br>• How did (students name) add 10 more to the number 65? How did (students name) subtract 10 less from the number 65? | • Team A scores 45 points and Team B scores 65 points. How many less points did Team A score?<br>• Explain why the 1s place does not change when subtracting ten? |

## ASSESSMENT GUIDE

- Extend the counting sequence
- Understand Place Value
- Use place value understanding and properties to add and subtract

| *Grade* | *CCSS Domain* | *CCSS Strand* |
|---|---|---|
| **1** | **Number and Operations in Base Ten** | **Extend the counting sequence** |
| | **Sample Task #1 (Constructed Response)** | |

NEW MEXICO
Public Education Department

Circle the numbers that make ten.
Draw a picture, and complete the number sentences to solve.

1 $8 + 2 + 3 =$ _____

_____ + _____ = _____

10 + _____ = _____

**Sample Task #2**

1

There are _____ peanuts.

| *Grade* | *CCSS Domain* | *CCSS Strand* |
|---|---|---|
| **1** | **Number and Operations in Base Ten** | **Understand Place Value** |
| | **Sample Task #1 (Constructed Response)** | |

Solve the problems. Write your answers to show how many **tens** and **ones**. If there is only 1 ten, cross off the "s."

Add.

$8 + 7 =$ ☐☐

_____ tens and _____ ones

**Sample Task #2**

is the same as

_____ ones and _____ ten.

| Grade | CCSS Domain | CCSS Strand |
|---|---|---|
| 1 | Number and Operations in Base Ten | Use place value understanding and properties of operations to add and subtract |

New Mexico Instructional Scope

# 1st Grade Number and Operations in Base Ten Guide

| Sample Task #1 (Constructed Response) |
|---|
| Solve on your own. Show your thinking by drawing or writing.<br>Write a statement to answer the question.<br><br>There were 12 sugar cookies in the box. My friend and I ate 5 of them. How many cookies are left in the box? |
| **Sample Task #2** |
| Complete the subtraction sentences by using either the count on or take from ten strategy. Tell which strategy you used.<br><br>17 - 9 = ____ ☐ take from ten ☐ count on |

## MLSS AND CLR GUIDE

- Extend the counting sequence
- Understand Place Value
- Use place value understanding and properties to add and subtract

| *CCSS Domain* | *CCSS Cluster* |
|---|---|
| **Number and Operations in Base Ten** | **Extend the counting sequence** |

## Culturally and Linguistically Responsive Instruction

| | |
|---|---|
| **Relevance to Families and Communities** | During a unit focused on extending the counting sequence, consider options for learning from your families and communities the cultural and linguistic ways this mathematics exists outside of school to create stronger home to school connections for students, students make connection of number sense by counting objects within 120, counting to |

NEW MEXICO
Public Education Department

| | | |
|---|---|---|
| | 100 is easier than counting to 120 because of number sense. "What number comes after 100?" | |
| **Cross-Curricular Connections** | Social Studies: In first grade, the New Mexico Social Studies Standards state students should "describe different ways to determine a decision (e.g., majority rule, consensus, authoritarian [parent, teacher, principal])". Consider providing a connection for students to have 120 people or less (maybe the entire first grade) vote on something and then count the votes.<br>Classroom Jobs (or other similar routine): Consider providing a connection to counting or taking inventory of various items around the classroom. | |
| **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?*<br>• *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 extending the counting sequence the types of mathematical tasks are critical because students need to be able to count on or backwards from any given number as they get into higher grades. It is important for students to be fluent and have a good understanding of the order of numbers. Students can also count in their home language, if possible. |

## Planning for Multi-Layered System of Supports

| **Vertical Alignment** | | |
|---|---|---|
| ***Previous Learning*** | ***Current Learning*** | ***Future Learning*** |

New Mexico Instructional Scope

# 1st Grade Number and Operations in Base Ten Guide

| | | |
|---|---|---|
| • Connect to counting from 1 to100 by ones and tens beginning with any number and reading, writing and representing objects with a range of numbers from 0-20. **(K.CC.1-3)** | • Connect to understanding that the two-digits in the two-digit number represent tens and ones. **(1.NBT.2)** | • Connect to skip counting within 1000 (by 5s,10s and 100s) and using base ten numerals, number names, and expanded form to read and write numbers within 1000. **(2.NBT.1-3)** |

**Suggested Instructional Strategies**

**Pre-Teach**

| ***Level of Intensity*** | ***Essential Question*** | ***Examples*** |
|---|---|---|
| Targeted | *What pre-teaching will prepare students to productively struggle with the mathematics for this cluster within your HQIM?* | For example, some learners may benefit from targeted pre-teaching that introduces new representations (e.g., number lines or number chart) when studying extending the counting sequence because students will be exposed to the written and oral representation of counting on from any given number to 120. Also, students are expected to represent several objects with the written form. |
| Intensive | *What critical understandings will prepare students to access the mathematics for this cluster?* | K.CC.A.1 This standard provides a foundation for work with extending the counting sequence because students begin to count forward to 100 by ones and tens. 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**

New Mexico Instructional Scope

# 1st Grade Number and Operations in Base Ten Guide

| A student should know/understand... | A student should be able to do... | ***Potential Scaffolds*** |
|---|---|---|
| • There is an order to numbers (sequence) when counting.<br>• A number represents a given amount of objects.<br>• The place of a digit determines its value. | • Count on from any given number in the range 0-120.<br>• Read and write numerals to 120. | • Build on students' experience with the following skills:<br>  ○ Model how to use a hundreds chart to sequence numbers up to 120.<br>  ○ Model how to read numbers within 120.<br>  ○ Give students multiple opportunities to practice writing numbers in sequence to 120.<br>  ○ Model how to find a given number on a hundreds chart and count on or back from that number.<br>  ○ Show students the pattern on a hundreds chart for 10 more or 10 less.<br>  ○ Show students how numbers 10 + are composed of a group of ten and some more.<br><br>• Cognitive Strategies<br>  ○ Repeatedly model the strategies.<br>  ○ Monitor the students' use of the strategies.<br>  ○ Provide feedback to students<br>  ○ Teach self-questioning and self-monitoring strategies.<br>  ○ Introduce multiple means of representation for mathematical ideas.<br><br>• Encourage students to use alternative tools to better access the grade level content. Examples include:<br>  ○ Digital or hands on manipulatives: two colored counters, linking cubes, base ten blocks, bears, ten frame counters, beans, straws, subitizing cards, beads, number bonds, dice, dominoes, playing cards, student balance, hundreds chart, etc...<br>  ○ Digital resources from math programs or online resources for counting, comparing, addition, and subtraction practice. |

New Mexico Instructional Scope

# 1st Grade Number and Operations in Base Ten Guide

| Re-Teach | | |
|---|---|---|
| ***Level of Intensity*** | ***Essential Question*** | ***Examples*** |
| Targeted | What formative assessment data (e.g., tasks, exit tickets, observations) will help identify content needing to be revisited during a unit? | For example, students may benefit from re-engaging with content during a unit that focuses on extending the counting sequence by providing specific feedback to students on their work through a short mini-lesson because as students are able to give feedback to other students, then they are able to do some critical thinking to determine where there might have been an error as the students was counting from any given number. |
| Intensive | What assessment data will help identify content needing to be revisited for intensive interventions? | For example, some students may benefit from intensive extra time during and after a unit extending the counting sequence by offering opportunities to understand and explore different strategies because students need to be exposed to multiple opportunities to be able to get a concrete understanding of counting on from any given number. It would be helpful to provide students with a number chart or number line to provide visual support. |
| **Extension** | | |
| ***Essential Question*** | | ***Examples*** |
| What type of extension will offer additional challenges to 'broaden' your student's knowledge of the mathematics developed within your HQIM? | | For example, some learners may benefit from an extension such as open-ended tasks linking multiple disciplines when studying extending the counting sequence because an open-ended task would allow students more practice to become more fluent with counting on from any given number. |

| *CCSS Domain* | *CCSS Cluster* |
|---|---|
| **Number and Operations in Base Ten** | **Understand place value** |

## Culturally and Linguistically Responsive Instruction

NEW MEXICO
Public Education Department

New Mexico Instructional Scope

# 1st Grade Number and Operations in Base Ten Guide

| | | |
|---|---|---|
| **Relevance to Families and Communities** | During a unit focused on understanding 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, students can make the connection that two two-digit numbers have ones and tens, so 5 tens and 4 ones is 54. Families can play "I spy" number game. Make connections with two two-digit numbers, use vocabulary words greater than, less than, and equal to instead of bigger or smaller numbers. Connect the vocabulary words with the symbol greater than >, less than <, and equal to = whenever possible. | |
| **Cross-Curricular Connections** | Science: In first grade the NGSS state students should "make observations at different times of year to relate the amount of daylight to the time of year." Consider providing a connection for students to compare the number of hours of daylight during different times of the year.<br><br>Art: Even though there is a difference between illustrating or drawing and pictorial representation in math, students do need significant experience with concrete representations to develop the idea of place value. Consider providing a connection where they can create pictures that include groups of ten objects together and then single ones (such as a bouquet of flowers and single flowers or a bunch of balloons and single balloons). | |
| **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?*<br>• *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* | • Building Procedural Fluency from Conceptual Understanding: Instruction should build from conceptual understanding to allow students opportunities to make meaning of mathematics before focusing on procedures. When new learning begins with procedures it privileges those with strong prior familiarity with school mathematics procedures for solving problems and does not allow learning to build for more methods for solving tasks that occur outside of school mathematics. For example, when studying understanding place value, the types of mathematical tasks are critical because students need to have a strong understanding of place value before they begin to use numbers procedurally. It is important to utilize manipulatives when building a student's understanding of place value, so they can visually see the concept as well. Engage students in learning by building on their experiences and provide multiple options for how students can interact with instructional content. Use consistent spoken and body language with all students to avoid unconscious bias in verbal or nonverbal cues. A teacher randomly draws from popsicle sticks with student names when asking questions. This ensures all students have an |

| | | |
|---|---|---|
| | *use mathematics within school and society?* | equal chance of participating in the whole class discussion. |

# Planning for Multi-Layered System of Supports

## Vertical Alignment

| *Previous Learning* | *Current Learning* | *Future Learning* |
|---|---|---|
| • Connect to composing and decomposing using ten ones and some more ones. **(K.NBT.1)**<br>• Connect to working with values between 1 and 10 and identifying whether the number of objects in one group is greater than, less than, or equal to the number of objects in another group, as well as comparing two numbers between 1 and 10. **(K.CC.6-7)** | • Connect to applying place value strategies of breaking apart numbers into tens and ones to help with adding and subtracting within 100. **(1.NBT.4,6)**<br>• Connect to using the concept of tens and ones to mentally find 10 more or 10 less. **(1.NBT.5)** | • Connect to applying place value concepts to a larger range of numbers to include numbers to 1000. **(2.NBT.1-4)** |

## 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 provides additional time for confusion to happen with new mathematical ideas when studying understanding place value because place value is a foundational skill that students need to have a strong understanding, so allowing students time to explore any confusions would help them to clear up those confusions and build a deeper understanding of place value. |

New Mexico Instructional Scope

# 1st Grade Number and Operations in Base Ten Guide

| | | |
|---|---|---|
| Intensive | *What critical understandings will prepare students to access the mathematics for this cluster?* | K.NBT. A.1: This standard provides a foundation for work with understanding place value because students begin to decompose numbers from 11 to 19 into tens and ones. If students have unfinished learning within this standard, based on assessment data, consider ways to provide intensive pre-teaching support prior to the start of the unit to ensure students are ready to access grade level instruction and assignments. |

**Universal Support Framework**

| A student should know/understand... | A student should be able to do... | ***Potential Scaffolds*** |
|---|---|---|
| • A group of 10 ones is a unit called a "ten".<br>• The numbers from 11-19 are composed of a group of ten and 1,2,3,4,5,6,7,8,9 more. These quantities are represented by the two-digits of a two-digit number.<br>• Decade numbers are one group of 10, two groups of 10...9 groups of 10.<br>• The meaning of the mathematical symbols < and >. | • Bundle or group 10 ones to make a ten.<br>• Describe teen numbers using place value language, such as 17 is 1 ten and 7 ones.<br>• Connect words to written numerals.<br>• Compare two two-digit numbers by determining the number of tens and the number of ones in each number. | • Build on students' experience with the following skills:<br>  ○ Represent 10 as ten ones.<br>  ○ Represent numbers 11to 19 as a ten and some ones.<br>  ○ Represent two-digit numbers using physical tools, drawings, and number names (2 tens is 20, 2 tens and 7 ones is 27).<br>  ○ Explain the value of each digit in a two-digit number (place value).<br>  ○ Locate a two-digit number on a hundred chart and number line.<br><br>• Cognitive Strategies<br>  ○ Repeatedly model the strategies<br>  ○ Monitor the students' use of the strategies<br>  ○ Provide feedback to students<br>  ○ Teach self-questioning and self-monitoring strategies<br>  ○ Introduce multiple means of representation for mathematical ideas<br><br>• Encourage students to use alternative tools to better access the grade level content. Examples include:<br>  ○ Digital or hands-on manipulatives: two |

| | | |
|---|---|---|
| | | colored counters, linking cubes, base ten blocks, bears, ten frame counters, beans, straws, subitizing cards, beads, number bonds, dice, dominoes, playing cards, student balance, hundreds chart, etc...<br>○ 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? | For example, students may benefit from re-engaging with content during a unit on understanding place value by revisiting student thinking through a short mini-lesson because students might have some minor confusions on how to decompose numbers into tens and ones. Students should be using manipulatives, such as base-ten blocks, while building their understanding of place value. The use of a place value chart with base-ten blocks can help to solidify the student's understanding. |
| Intensive | What assessment data will help identify content needing to be revisited for intensive interventions? | For example, some students may benefit from intensive extra time during and after a unit understanding place value by confronting student misconceptions because students need to have a strong understanding of place value so it is important to clarify any misconceptions the student might have. It is important to utilize manipulatives so students can visually see the concept as well. |

| **Extension** | |
|---|---|
| ***Essential Question*** | ***Examples*** |
| What type of extension will offer additional challenges to 'broaden' your student's knowledge of the mathematics | For example, some learners may benefit from an extension such as open-ended tasks linking multiple |

| | |
|---|---|
| developed within your HQIM? | disciplines when studying understanding place value because an open-ended task would allow students to explore and have a deeper understanding of place value, which will benefit them in the future. |

| *CCSS Domain* | *CCSS Cluster* |
|---|---|
| **Number and Operations in Base Ten** | **Use place value understanding and properties of operations to add and subtract** |

## Culturally and Linguistically Responsive Instruction

| | | |
|---|---|---|
| **Relevance to Families and Communities** | During a unit focused on using place value understanding and properties of operations to add and subtract, 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, to work on some problem-solving activities together. They can use their home language for corresponding vocabulary and numbers. | |
| **Cross-Curricular Connections** | Science: In first grade the NGSS recommend studying light, transparency, and shadows. Consider providing a connection for students to add the lengths of the shadows of two items, where at least one length is in double-digits and the sum is within 100.<br><br>Social Studies: Social Studies: In first grade the New Mexico Social Studies Standards state students should “Understand the purpose of rules and identify examples of rules and the consequences of breaking them”. Consider providing a connection for students to “earn” and “lose” points for following or breaking various rules. Earning can be in groups of 1s, 2s and 5s, and losing can be in groups of 10. | |
| **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* | • 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 47 6 low expectations and low achievement. For example, |

| | | |
|---|---|---|
| | *marginalized cultures and languages?*<br>• *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?* | when studying, using place value understanding and properties of operations to add and subtract goal setting is critical because this is a foundational standard where so many skills are built from. Students need to feel comfortable with the tools and language needed to perform the tasks. There might need to be some added reflection time to encourage students to talk about what is confusing or what they understand. |

## Planning for Multi-Layered System of Supports

**Vertical Alignment**

| *Previous Learning* | *Current Learning* | *Future Learning* |
|---|---|---|
| • Connect to composing and decomposing numbers into tens and ones and students using what they know to solve word problems within 10. **(K.NBT.1, K.OA.2)** | • Connect to relating counting to addition and subtraction. **(1.OA.5)**<br>• Connect to starting to generalize addition and subtraction strategies to numbers within 100 and focusing on multiples of 10 to encourage the use of place value concepts/strategies. **(1.NBT.2)** | • Connect to fluently adding and subtracting within 100 and solving word problems using strategies based on place value properties of operations, and/or the relationship between addition and subtraction. **(2.NBT.5)** |

**Suggested Instructional Strategies**

New Mexico Instructional Scope

# 1st Grade Number and Operations in Base Ten Guide

NEW MEXICO
Public Education Department

| Pre-Teach | | |
|---|---|---|
| ***Level of Intensity*** | ***Essential Question*** | ***Examples*** |
| Targeted | *What pre-teaching will prepare students to productively struggle with the mathematics for this cluster within your HQIM?* | Some learners may benefit from targeted pre-teaching that uses images/resources when studying using place value understanding and properties of operations to add and subtract because the majority of this cluster will work from the hundreds chart. If students can review this chart and the numbers on it, this will help towards understanding. |
| Intensive | *What critical understandings will prepare students to access the mathematics for this cluster?* | K.NBT.A: Work with numbers 11-19 to gain foundations for place value This standard provides a foundation for work with place value because it combines the concept of ones and tens. 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*** |
| • When adding two two-digit numbers within 100 sometimes it is necessary to compose a ten.<br>• How to use knowledge of the tens place to know 10 more or 10 less than a given number without | • Model addition examples with sums to 100 using concrete materials, pictures, and numerals.<br>• Mentally find 10 more or 10 less than a given number in the range of 10-90.<br>• Mentally subtract multiples of 10 | • Build on students' experience with the following skills:<br>○ Show students the pattern on a hundreds chart for 10 more or 10 less.<br>○ Show students how numbers 10 + are composed of a group of ten and some more.<br>○ Model how the tens place changes in the digit when it's ten more or ten less.<br>○ Explain how counting by tens can help to mentally add and subtract by 10.<br>○ Model why making a ten can help to add |

| | | |
|---|---|---|
| counting. | within a range of 10-90. | two two-digit numbers within 100<br><br>● Cognitive Strategies<br>○ Repeatedly model the strategies<br>○ Monitor the students' use of the strategies<br>○ Provide feedback to students<br>○ Teach self-questioning and self-monitoring strategies<br>○ Introduce multiple means of representation for mathematical ideas<br><br>● Encourage students to use alternative tools to better access the grade level content. Examples include:<br>○ Digital or hands-on manipulatives: two colored counters, linking cubes, base ten blocks, bears, ten frame counters, beans, straws, subitizing cards, beads, number bonds, dice, dominoes, playing cards, student balance, hundreds chart, etc...<br>○ 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? | For example, students may benefit from re-engaging with content during a unit on using place value understanding and properties of operations to add and subtract by critiquing student approaches/solutions to make connections through a short mini-lesson because exploring where they went wrong in their approach to understanding place value for adding and subtracting, but also be reintroduced to tools and strategies that work better for their particular needs. |

| | | |
|---|---|---|
| Intensive | What assessment data will help identify content needing to be revisited for intensive interventions? | For example, some students may benefit from intensive extra time during and after a unit using place value understanding and properties of operations to add and subtract by offering opportunities to understand and explore different strategies because these students might need more individualized support with the different strategies introduced. The various strategies might be helpful to the student; however, they need step by step directions on how to use the strategies and tools to increase familiarity. |

| **Extension** | |
|---|---|
| ***Essential Question*** | ***Examples*** |
| What type of extension will offer additional challenges to 'broaden' your student's knowledge of the mathematics developed within your HQIM? | For example, some learners may benefit from an extension such as the opportunity to understand concepts more quickly and explore them in greater depth than other students. When studying using place value understanding and properties of operations to add and subtract because they could consider how adding and subtracting 100 more or less or 1000 more or less would differ from working with 10 more or less. |