

K.CC: COUNTING & CARDINALITY

Cluster Statement: A: Know number names and the count sequence.

Major Cluster (Students should spend the large majority of their time (65-85%) on the major work of the grade/course. Supporting work and, where appropriate, additional work should be connected to and engage students in the major work of the grade.)

<p>Standard Text</p> <p>K.CC.A.1: Count to 100 by ones and by tens.</p>	<p>Standard for Mathematical Practices</p> <p>SMP 6: Students can attend to precision by learning and using the number names when counting by ones and by tens.</p> <p>SMP 8: Students can look for and express regularity in repeated reasoning by recognizing patterns that exist when counting by ones and by tens. We always use the same 10 digits.</p>	<p>Students who demonstrate understanding can:</p> <ul style="list-style-type: none"> Count to 100 by ones, increasing their range with time Count to 100 by tens.
		<p>Depth of Knowledge: 1</p>
		<p>Bloom's Taxonomy: Remember</p>
<p>Standard Text</p> <p>K.CC.A.2: Count forward beginning from a given number within the known sequence (instead of having to begin at 1).</p>	<p>Standard for Mathematical Practices</p> <p>SMP 6: Students can attend to precision by learning and using the number names when counting by ones and by tens.</p> <p>SMP 7: Students can look for and make use of structure by using the patterns of ones and decades to count forward from any given number.</p>	<p>Students who demonstrate understanding can:</p> <ul style="list-style-type: none"> Count forward from a random starting number, instead of 1, increasing their range with time.

		<p>Depth of Knowledge: 1-2</p>
		<p>Bloom’s Taxonomy: Remember and Understand</p>
<p>Standard Text</p> <p>K.CC.A.3: Write numbers from 0 to 20. Represent a number of objects with a written numeral 0-20 (with 0 representing a count of no objects).</p>	<p>Standard for Mathematical Practices</p> <p>SMP 2: Students can reason abstractly and quantitatively by recognizing that each numeral symbol is connected to a specific quantity.</p> <p>SMP 8: Students look for and express regularity in repeated reasoning by recognizing patterns that exist when writing the numbers 1-20. We always use the same 10 digits and cycle through them in the same order for each place value.</p>	<p>Students who demonstrate understanding can:</p> <ul style="list-style-type: none"> • Students can write numbers 1-20, increasing their range with time. • Represent up to 20 objects with written numerals, no matter the arrangement of the objects. • Recognize the relationship between 0 and no objects.
		<p>Depth of Knowledge: 1</p>
		<p>Bloom’s Taxonomy: Remember</p>
<p>Previous Learning Connections</p> <ul style="list-style-type: none"> • Connect to counting by ones to 10 and higher. • Connect to recognizing and naming numerals 1 to 5. 	<p>Current Learning Connections</p> <ul style="list-style-type: none"> • Connect continuing in the Counting and Cardinality domain to use counting to tell the number of objects. (K.CC.4) • Connect to continuing to work with concepts of number meaning in the domains of Operations and Algebraic Thinking, as well as Number and Operations in Base Ten. 	<p>Future Learning Connections</p> <ul style="list-style-type: none"> • Connect to extending the counting sequence, number recognition and writing to 120. (1.NBT.1)
<p>Clarification Statement: The emphasis of this cluster is on the counting sequence. When counting by ones, students need to understand that the next number in the sequence is one more. When counting by tens, the next number in the sequence is “ten more” (or one more group of ten). Students should be able to count forward from any number, 1-99. Students should be given multiple opportunities to count objects and recognize that a number represents a specific quantity.</p>		
<p>Common Misconceptions</p> <ul style="list-style-type: none"> • Struggling with continuous counting and skipping numbers • Being confused by the names for the teen numbers • Believing that counting must always start at 1 • Not seeing 0 as a number 		

- Inverting and/or reversing numerals

Multi-Layered System of Supports (MLSS)/Suggested Instructional Strategies

Pre-Teach

Pre-teach (targeted)

What pre-teaching will prepare students to productively struggle with the mathematics for this cluster within your HQIM?

For example, some learners may benefit from targeted pre-teaching that introduces new representations when studying knowing the number names and the count sequence because students will need support when learning numbers and number sequences. Visual aids that give support create confidence and will stimulate thinking and improve the learning environment in a classroom.

Pre-teach (intensive)

What critical understandings will prepare students to access the mathematics for this cluster?

Indicator 9.3 of the "New Mexico Early Learning Guidelines, Essential Indicator" will provide some knowledge that is required. This standard provides a foundation for work with numbers and ways of representing numbers because numbers represent quantity or "how many". Children who develop number sense understand the order in math. They see the relationships that numbers have to one another; they understand how numbers are put together and taken apart; and they have an intuitive sense about our number system. If students have unfinished learning within this standard, based on assessment data, consider ways to provide intensive pre-teaching support prior to the start of the unit to ensure students are ready to access grade level instruction and assignments.

Core Instruction

Access: How will the learning for students provide multiple options for recruiting student interest?

For example, learners engaging with: Know number names and the count sequence benefit when learning experiences include ways to recruit interest such as utilizing classroom instructional routines to involve all students because as in other subjects, math students must be able to read, write, listen, speak, and discuss the subject at hand. Routines that are designed to support a variety of language-focused skill growth reinforcing mathematical terminology and providing opportunities for students to deepen their conceptual understanding by describing their work. Routines, done regularly, can benefit all students, though they are particularly supportive of English Language Learners or those struggling with the linguistic components of math.

Build:

Effort and Persistence: How will the learning for students provide options for sustaining effort and persistence?

For example, learners engaging with Counting to 100 by ones and by tens and counting forward beginning from a given number other than 1, benefit when learning experiences attend to students attention and affect to support sustained effort and concentration such as constructing communities of learners engaged in common interests or activities because learners must be able to communicate and collaborate effectively within a community of learners which introduces the processes and structures that form the basis of mathematics that establishes the mathematical community. Classroom routines develop the concept of community and shared interests and because routines are done often students have my opportunities to count and to see and hear others count.

Language and Symbols: How will the learning for students provide alternative representations to ensure accessibility, clarity and comprehensibility for all learners? (e.g., a graph illustrating the relationship between two variables may be informative to one learner and inaccessible or puzzling to another; picture or image may carry very different meanings for learners from differing cultural or familial backgrounds)

For example, learners engaging with Counting to 100 by ones and by tens and counting forward beginning from a given number other than 1, benefit when learning experiences attend to the linguistic and nonlinguistic representations of mathematics to ensure clarity can comprehensibility for all learners

such as making connections to previously learned structures because the words, symbols and numbers are differentially accessible to learners with varying backgrounds, languages, and lexical knowledge. To ensure accessibility for all, number names should be linked to, or associated with, alternate representations of their meaning (e.g., calendar, birthday chart or map). Providing different ways for students to see numbers helps them to draw on previous knowledge such as.

Expression and Communication: How will the learning provide multiple modalities for students to easily express knowledge, ideas, and concepts in the learning environment?

For example, learners engaging with Counting to 100 by ones and by tens and counting forward beginning from a given number other than 1 benefit when learning experiences attend to the multiple ways students can express knowledge, ideas, and concepts such as using physical manipulatives (e.g., blocks, 3D models, base-ten blocks) because math manipulatives help make abstract ideas concrete for students as well as giving them a reason to test and confirm their reasoning. Concrete objects help to intrigue and motivate students.

Internalize:

Comprehension: How will the learning for students support transforming accessible information into usable knowledge, knowledge that is accessible for future learning and decision-making?

For example, learners engaging with Counting to 100 by ones and by tens and counting forward beginning from a given number other than 1 benefit when learning experiences attend to students by intentionally building connections to prior understandings and experiences; relating important information to the learning goals; providing a process for meaning making of new learning; and, applying learning to new contexts such as incorporating explicit opportunities for review and practice because giving children experience with immediately recognizing and labeling quantities of a collection and having them answer the question “How many are there?” helps to solidify the concept. To help children construct a more abstract concept of number, teachers can use classroom routines and procedures that involve counting and numbers.

Re-teach

Re-teach (targeted)

What formative assessment data (e.g., tasks, exit tickets, observations) will help identify content needing to be revisiting during a unit?

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

Re-teach (intensive)

What assessment data will help identify content needing to be revisited for intensive interventions?

Some students may benefit from intensive extra time during and after a unit counting to quantity by offering opportunities to understand and explore different strategies because it is important for students to have lots of opportunities to practice counting and hearing others count in order to develop fluency with place value patterns and allows students to become familiar with patterns through counting. ...

Extension

What type of extension will offer additional challenges to ‘broaden’ your student’s knowledge of the mathematics developed within your HQIM?

Some learners may benefit from an extension such as the opportunity to explore links between various topics when studying knowing the number names and the count sequence because cross-curricular teaching, or instruction that intentionally applies multiple academic disciplines simultaneously, is an effective way to teach students transferable problem solving skills, give real-world meaning to school assignments, and increase engagement and rigor.

Culturally and Linguistically Responsive Instruction:

Validate/Affirm: 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?

Build/Bridge: 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 knowing number names and the counting in sequence the types of mathematical tasks are critical because Practices within a culture affect understanding. Some assessment tools may greatly underestimate the knowledge that students possess. Tools that are used in students' everyday lives may better capture student understanding. For example, a student who stops by the corner store to buy snacks every day understands place value to some degree but may not be able to show that knowledge using cubes.

Standards Aligned Instructionally Embedded Formative Assessment Resources:

http://s3.amazonaws.com/illustrativemathematics/attachments/000/009/254/original/public_task_1397.pdf?1462395701

The purpose of this task is to give students an opportunity to count real objects and write numbers. This activity can become a daily 10-minute routine, with the students counting as many bags of "stuff" as they can in that time period. Students can also work together in pairs. Students should focus on the numerals 1-10 before continuing with numerals 11-20. A number line or chart could be made available for those students who need support.

Relevance to families and communities:

During a unit focused on counting, consider options for learning from your families and communities the cultural and linguistic ways this mathematics exists outside of school to create stronger home to school connections for students, for example, incorporating how mathematical concepts were already being used at home. Then finding ways to incorporate this prior knowledge, such as familiarity with sports, into classroom lessons. Instead of using football merely as the context for a problem, the numbers inherent to football, like series of sevens and threes, could be used.

Cross-Curricular Connections:

Social Studies: In Kindergarten, the New Mexico Social Studies Standards state students should "identify classroom population". Consider providing a connection for students to count the classroom population in ways that change (such as number of students present and number of students absent each day).

Morning Meeting (or other morning routine): Consider providing a connection to counting various aspects related to the calendar, including the first 100 days of school.