

KINDERGARTEN MATHEMATICS GUIDANCE FOR UNIT 1 - SCOPE & SEQUENCE (UPDATED 05/03/2019)

Guidance for Unit # 1	Counting and Cardinality with Sets to 7	Approximate Time Frame: 15-20 days
Focus of the Unit: Kindergarteners will practice counting and begin developing an understanding of cardinality and one-to-one correspondence. Oral counting should be practiced daily to increase student fluency with the counting sequence. After counting sequence fluency, kindergarteners are able to focus on one-to-one pairing when counting objects and connecting written numerals to quantities. Students will begin to write numerals to represent objects in a group. Students will also develop the understanding that counting can begin at any number. This unit expects kindergarteners to count, write, and represent numbers 0-7.		
Connections to Previous Learning: This is a beginning unit of formal math instruction for many kindergarteners and serves as an introduction to counting and cardinality, although some students attended prekindergarten programs with number sense routines. Some students may already verbally count in sequence and understand relationships between numerals, number names, and quantities. We cannot assume experiences for all kindergarteners.		
Where the Learning Goes Next: This introductory unit provides students with the basic skills of counting, cardinality, and number sequence. Counting and Cardinality lays the foundation for students to build a strong number sense that will be essential in all domains of further math instruction, particularly Operations and Algebraic Thinking and Number and Operations in Base Ten. When students are able to count and represent numbers in various ways (composing, decomposing, matching numbers to quantities, and writing numbers) they are able to build their understanding of the properties of arithmetic.		
Content Standards Addressed in this Unit: K.CC.A.1 (ones to 20), K.CC.A.2, K.CC.A.3, K.CC.B.4, K.CC.B.4a, K.CC.B.4b, K.CC.B.4c, K.CC.B.5	Practice Standards to be Emphasized in this Unit: MP2: Reason abstractly and quantitatively. MP4: Model with mathematics. MP5: Use appropriate tools strategically. MP6: Attend to precision. MP7: Look for and make use of structure. MP8: Look for and express regularity in repeated reasoning.	

NOTE: The text of the standards have been marked using the code below.

~~Strikethrough~~: This portion of the standard is taught in another unit. **Green**: Major Work of the Grade

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Standards	Instructional Notes
<p>K.CC.A.1. Count to 100 by ones, fives, and tens. Count backward from 10.</p> <p>Tie in MP6, MP7, and MP8.</p>	<ul style="list-style-type: none"> • Provide students daily experiences in orally counting by ones to 20. Students also need daily experiences in orally counting backward from 10. • When counting by ones, students need to understand that the next number in the sequence is one more. Counting should be reinforced throughout the day (count the number of students in class, number of doors on the way to gym), not in isolation.
<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>Tie in MP6, MP7, and MP8.</p>	<ul style="list-style-type: none"> • During the first quarter, teachers will teach counting forward from any given number (1-20). Provide daily practice and repeated exposure through games, songs, and videos. • Students begin a rote forward counting sequence from a number other than 1. Thus, given the number 4, the student would count, “4, 5, 6, 7 ...” This objective does not require recognition of numerals. It is focused on the rote number sequence.
<p>K.CC.A.3 Write numbers from 0 to 20. Represent a number of objects with a written numeral 0-20.</p> <p>Tie in MP6, MP7, and MP8.</p>	<ul style="list-style-type: none"> • Students are expected to write numbers 0-7 by the end of the first quarter. • Students will need many opportunities to practice writing numbers 0 to 7. Teacher direction is essential in students’ learning the correct writing formation of each number. • Providing students with materials such as playdough and number puzzles will help develop their fine motor skills needed for holding a pencil and writing numbers.

	<ul style="list-style-type: none"> Activities should include experiences in counting sets of objects up to 7, with students providing a written number to match the quantity of the set. Students write the numerals 0-7 and use the written numerals 0-7 to represent the amount within a set. For example, if the student has counted 6 objects, then the written numeral “6” is recorded. Students can record the quantity of a set by selecting a number card/tile (numeral recognition) or writing the numeral. Students can also create a set of objects based on the numeral presented. <p>Misconceptions</p> <ul style="list-style-type: none"> Due to varied stages of fine motor and visual development, reversal of numerals is anticipated. While reversals should be pointed out to students and correct formation modeled in instruction, the emphasis of this standard is on the use of numerals to represent quantities rather than the correct handwriting formation of the actual numeral itself. Students may develop matching quantities to numerals before producing that number of objects when given materials or asked to draw a picture due to the lower cognitive demand. This concept will take time to develop (Gojak & Harbin Miles, 2015).
<p>K.CC.B.4 Understand the relationship between numbers and quantities; connect counting to cardinality.</p> <p>a. When counting objects, say the number names in the standard order, using one-to-one correspondence.</p>	<ul style="list-style-type: none"> Relationships between numbers and quantities will be limited to 0-7 in the first quarter. Provide students with a wide variety of objects to count. Students implement correct counting procedures by pointing to one object at a time (one-to-one correspondence) and using one counting word for every object (synchrony/one-to-one), while keeping track of objects that have and have not been counted. This is the foundation of counting.

<p>b. Recognize that the last number name said tells the number of objects counted. The number of objects is the same regardless of their arrangement or the order in which they were counted.</p> <p>c. Recognize that each successive number name refers to a quantity that is one greater.</p> <p>Tie in MP2, MP4, MP6, MP7, and MP8.</p>	<ul style="list-style-type: none"> • It is important to observe and listen to students as they begin to use one-to-one correspondence. In doing so, the teacher will have opportunities to determine the progression of the students' developing number sense. • Begin using five frames and counters with kindergarteners to show quantities 1-5. Progress to ten frames when introducing 6 and 7. • Daily subitizing activities will help students visualize the quantities in formation as in a dice pattern. Subitizing should also include scattered patterns. • Provide students with experiences in counting the same number of objects in a variety of arrangements. Guide students in discovering that the number of objects does not change based on the arrangement of the objects in the set. • Students answer the question "How many are there?" by counting objects in a set and understanding that the last number stated when counting a set (...4, 5, 6, 7) represents the total amount of objects. <p>Misconceptions</p> <ul style="list-style-type: none"> • Young children believe what they see. Therefore, they may believe that a pile of cubes that they counted may be more if spread apart in a line. As children move towards the developmental milestone of conservation of number, they develop the understanding that the number of objects does not change when the objects are moved, rearranged, or hidden. Children need many different experiences with counting objects, as well as maturation, before they can reach this developmental milestone.
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<p>K.CC.B.5 Count to answer “how many?” questions about as many as 20 things arranged in a line, a rectangular array, a circle, or as many as 10 things in a scattered configuration. Given a number from 1-20, count out that many objects.</p> <p>Tie in MP2, MP4, MP6, MP7, and MP8.</p>	<ul style="list-style-type: none"> • Often times, children who have not developed cardinality will count the amount again, not realizing that the 7 they stated means 7 objects in all. • Students must understand that the purpose of counting is to find out “how many?” Teachers should not assume that students have made this connection simply because they are able to say the correct number when they get to the end of the objects in a set. By asking students to find out how many are in a set, rather than directing them to count the objects, teachers present the task as a problem to be solved. • Students should be using one-to-one correspondence when counting objects in a group and be given daily experiences with counting real life objects (manipulatives). Students should be able to count out a number of objects when given given numbers 1-7 this nine weeks. They should also be able to show an empty set for the number 0. • <i>Provided with permission from the Public Schools of North Carolina (May 2012)</i> After numerous experiences with counting objects, along with the developmental understanding that a group of objects counted multiple times will remain the same amount, students recognize the need for keeping track in order to accurately determine “how many”. Depending on the amount of objects to be counted, and the students’ confidence with counting a set of objects, students may move the objects as they count each, point to each object as counted, look without touching when counting, or use a combination of these strategies. It is important that children develop a strategy that makes sense to them based on the realization that keeping track is important in order to get an accurate count, as opposed to following a rule, such as “Line them all up before you count”, in order to get the right answer.
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	<ul style="list-style-type: none"> • <i>Provided with permission from the Public Schools of North Carolina (May 2012)</i> As children learn to count accurately, they may count a set correctly one time, but not another. Other times they may be able to keep track up to a certain amount, but then lose track from then on. Some arrangements, such as a line or rectangular array, are easier for them to get the correct answer but may limit their flexibility with developing meaningful tracking strategies, so providing multiple arrangements help children learn how to keep track. Since scattered arrangements are the most challenging for students, this standard specifies that students only count up to 10 objects in a scattered arrangement and count up to 20 objects in a line, rectangular array, or circle. <p>Misconceptions</p> <ul style="list-style-type: none"> • If asked instead to count a set of objects, students may correctly repeat the counting sequence and say the correct number name as they touch the last object without realizing that the point of the process is to find out how many objects are in the set. If the teacher immediately asks that child how many there are, he/she may make a random estimate, or begin to count again. If students do not grasp the idea that counting is used to find out how many there are, they are merely repeating a meaningless chant while they point to objects.
Conceptual Understandings and Resources to Support Them	
<p>Counting to 20</p> <ul style="list-style-type: none"> • There is a counting sequence that is made up of number words in a specific order (developed and solidified through number routines). <ul style="list-style-type: none"> • Daily Routines: Counting videos, songs, circle counting games, counting books, calendar routine <p>One to One Correspondence Sets to 7</p> <ul style="list-style-type: none"> • Understand each successive number name refers to quantity that is one larger, because each time a successive number is named, one has been added to the quantity. 	

- Counting tells how many things are in a set, and the total number of objects in the set by the last number said when all items have been counted.
- Counting includes one-to-one correspondence, regardless of the kind of object in a set and the order in which they are counted.
- The number of objects remains the same in amount despite changes in their location or the size of the objects.
- Numbers are used to represent a quantity.
- Written numbers communicate “how many”. Consistent and accurate number formation is necessary for shared understanding.
- Mapping devices help organize items for counting (five frame, ten frame).

[Developing Tasks](#) (Click on link for tasks)

[Solidifying Tasks](#)

[Practicing Tasks](#)

Knowledge	Skills That Demonstrate Understanding
<ul style="list-style-type: none"> • Know the counting sequence by ones to 20. • Counting can begin from any given number. • There is a backwards counting sequence. • There is a word and written numeral for each number in the counting sequence. • Each object in a group matches only one number name (one-to-one correspondence). <p>Academic Vocabulary:</p> <ul style="list-style-type: none"> • Count 	<ul style="list-style-type: none"> • Orally count by ones to 20. • Orally count forward beginning at a given number up to 20. • Orally count backwards from 10. • Identify numerals up to 7. • Represent numerals up to 7 in writing. • Count objects orally to 7 using one-to-one correspondence. • Count up to 7 objects arranged in a line, a rectangular array, circle or a scattered configuration. • Label a set of objects up to 7 with the written numeral. • Given a number from 0-7, count out that many objects.

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<ul style="list-style-type: none">• Number• Numeral• Number Names 0-20• How Many?• Count Forward• Count Back• Next• Before• After• Objects• Sort• Group• Match• Same• Ten frame• Five frame	<ul style="list-style-type: none">• Discuss and articulate mathematical ideas using precise mathematical vocabulary.
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