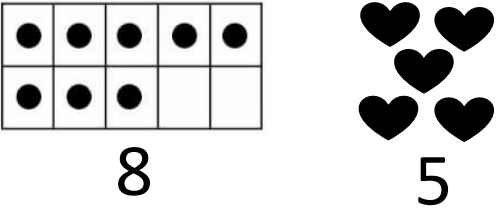
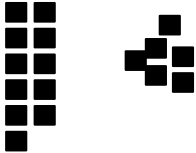


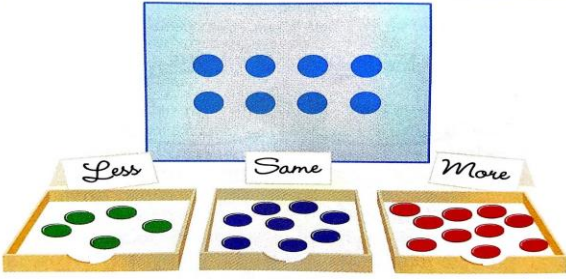
Know number names and the counting sequence (Standards K.CC.1–3)	
Standard K.CC.1. Count to 100 by ones and by tens.	
Concepts and Skills to Master	
<ul style="list-style-type: none"> • Understand there is an ordered sequence of counting numbers • Say counting numbers in the correct sequence from 1 to 10 • Say counting numbers in the correct sequence from 1 to 20 attending to how teen numbers are worded (see teacher note below) • Say counting numbers in the correct sequence from 1 to 100 attending to the patterns of increasing by ones and tens (decade numbers) • Say decade counting numbers in the correct sequence from 10 to 100 <p>Teacher note: This standard does not require students to read or write numerals, only to verbalize them. While this standard only addresses rote counting, students may count along a number line to support standard K.CC.3.</p> <p>“Essentially, English-speaking children have to memorize the number names for numbers from 1 to 12. The teen numbers (13–19) have roots in the numbers from 3 to 9, which can provide some support for learning them, but there are quirks in the language. <i>Fourteen, sixteen, seventeen, eighteen, and nineteen</i> essentially add <i>teen</i> (standing for <i>ten</i>) onto <i>four, six, seven, eight, and nine</i>. But <i>thirteen</i> and <i>fifteen</i> are a little different. As a consequence, some children may say “fiveteen” instead of “fifteen.” Interestingly, this seems to represent an attempt to make some sense of the counting sequence and may be made by children who have some insight at least into the patterns represented by the counting sequence and are trying to make sense of counting rather than just memorize a rote sequence of meaningless words. ...</p> <p>After 20, things start to make more sense and generative rules can be applied. To count beyond 20, children, need only to apply their knowledge of counting from 1 to 9 for the numbers between decade numbers (20, 30, 40, and so on). The most likely place for errors to occur is when the count gets to a new decade (<i>thirty-ten</i> rather than <i>forty</i>). As with the teens, twenty has only a slight resemblance to two, and thirty and fifty are marginally related to three and five. The other decade numbers incorporate the corresponding number names of numbers less than 10, but <i>-ty</i> (as in <i>sixty</i>) is used in place of <i>ten</i>. There is a pattern, but the language does not clearly support the conceptual notion of groups on ten.” (Carpenter, T. P., Franke, M. L., Johnson, N.C., Turrou, A. C., & Wager, A. A. (2016). <i>Young children’s mathematics: Cognitively guided instruction in early childhood education</i>. Portsmouth, NH: Heinemann. pp. 10–12)</p>	
Related Standards: Current Grade Level	Related Standards: Future Grade Levels
K.CC.2 Count forward beginning with a number other than one K.CC.4 Understand the relationship between numbers and quantities	1.NBT.1 Count to 120 beginning with any number; read and write numerals and represent numbers with objects within this range 1.NBT.2 Understand that two-digit numbers represent amounts of tens and ones 2.NBT.2 Count within 1,000; skip-count by fives, tens, and hundreds
Critical Background Knowledge	
<ul style="list-style-type: none"> • Students may or may not have pre-kindergarten experience counting from 1–20 or beyond 	
Academic Vocabulary	
count, after, next, ones, tens, decade numbers (10, 20, 30, 40, 50, 60, 70, 80, 90, 100), number names from 1 to 100	
Suggested Models	Suggested Strategies
To count beyond twenty, students may use their understanding of decade numbers and ones to recognize and continue the pattern of counting to 100. For example, a child may say, “I know that after the teen numbers, I can use decade numbers to continue the pattern, so ‘twenty-one,’ ‘twenty-two,’ ‘twenty-three,’ ...”	<ul style="list-style-type: none"> • Use a variety of nursery rhymes and number songs to help associate number sequence with familiar situations (“One, two, buckle my shoe,” “One potato, two potato,” etc.) • Use kinesthetic and/or auditory cues while counting (clapping, jumping, whistles, etc.) • Count along a number line • Count along a hundreds chart • Integrate counting with calendar routines

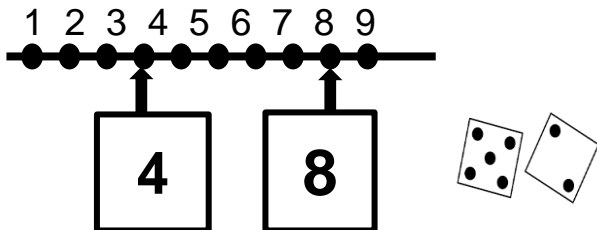
Know number names and the counting sequence (Standards K.CC.1–3)	
Standard K.CC.2. Count forward beginning from a given number within the known sequence (instead of having to begin at 1).	
Concepts and Skills to Master	
<ul style="list-style-type: none"> Understand there is an ordered sequence of counting numbers Say counting numbers in the correct sequence between 1 and 100, beginning at any number other than one 	
<p>Teacher note: This standard does not require students to read or write numerals, only to verbalize them.</p> <p>“Counting must be done by saying the number names in a fixed order. Thus, children not only need to learn the number names, they also need to understand the principle that counting numbers appear in a fixed sequence. They also need to understand that numbers are not repeated in the counting sequence, and they have to learn the specific order of number names in that sequence. Young children may learn some of these features of counting before others. For example, some children may learn some number names, but not understand that the numbers follow a sequence. Other children may understand that numbers should follow a fixed sequence but not know what the correct sequence is.” (Carpenter, T. P., Franke, M. L., Johnson, N.C., Turrou, A. C., & Wager, A. A. (2016). <i>Young children’s mathematics: Cognitively guided instruction in early childhood education</i>. Portsmouth, NH: Heinemann. p. 9)</p>	
Related Standards: Current Grade Level	Related Standards: Future Grade Level
K.CC.1 Count to 100 by ones and by tens K.CC.4 Understand the relationship between numbers and quantities	1.NBT.1 Count to 120 beginning with any number; read and write numerals and represent numbers with objects within this range 1.OA.5 Relate counting to addition and subtraction 1.OA.6 Add and subtract within 20 using strategies such as counting on 2.OA.2 Fluently add and subtract within 20 using mental strategies such as counting on 2.NBT.2 Count within 1,000; skip-count by fives, tens, and hundreds
Critical Background Knowledge	
<ul style="list-style-type: none"> Say counting numbers in the correct sequence from 1 to 20 attending to how teen numbers are worded (see teacher notes on K.CC.1) Say counting numbers in the correct sequence from 1 to 100 attending to the patterns of increasing by ones and tens (K.CC.1) 	
Academic Vocabulary	
count, after, next, ones, counting on, number names from 1 to 100	
Suggested Models	Suggested Strategies
<p>To count beyond twenty, students may use their understanding of decade numbers and ones to recognize and continue the pattern of counting to 100. For example, a child may say, “I know that after the teen numbers, I can use decade numbers to continue the pattern, so ‘twenty-one,’ ‘twenty-two,’ ‘twenty-three,’ ...”</p> <p>43, 44, __, __, __...</p>	<ul style="list-style-type: none"> Use kinesthetic and/or auditory cues while counting (clapping, jumping, whistles, etc. For example: Students start counting from three and clap on the decade numbers) Teacher supports counting by beginning the sequence for the students to provide the first few numbers (For example, if a child does not know what comes after “thirteen,” the teacher prompts, “ten, eleven, twelve, thirteen”) Extend understanding by orally counting on from a given number to a target number Count along a number line Count along with a hundreds chart Integrate counting with calendar routines

Know number names and the counting sequence (Standards K.CC.1–3)	
Standard K.CC.3. Read and write numbers using base ten numerals from 0 to 20. Represent a number of objects with a written numeral, in or out of sequence (0 represents a count of no objects).	
Concepts and Skills to Master	
<ul style="list-style-type: none"> Recognize and write numerals 0 - 20 Recognize that 0 represents a count of no objects Represent a number of objects with a written numeral, not necessarily counting to name the quantity <p>Teacher Note: “Due to varied development of fine motor and visual development, reversal of numerals is anticipated. While the 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 formations of the actual numeral itself.” (http://www.dpi.state.nc.us/docs/curriculum/mathematics/scos/kindergarten.pdf p. 5)</p> <p>“Helping children read and and write the 10 single-digit numerals is similar to teaching them to read and write letters of the alphabet. Neither has anything to do with number concepts. Numeral writing does not have to be repetitious practice, but it can be engaging.” (Van de Walle, J. A, Karp, K., & Bay-Williams, J. M. (2013). Elementary and middle school mathematics : teaching developmentally. 8th ed. / Boston: Pearson. pp. 132-133)</p>	
Related Standards: Current Grade Level	Related Standards: Future Grade Level
<p>K.CC.1 Count to 100 by ones</p> <p>K.CC.4 Understand the relationship between numbers and quantities; connect counting to cardinality</p> <p>K.CC.5 Use counting to answer questions about “how many”</p> <p>K.CC.7 Compare two numbers 1–10 represented as written numerals</p>	<p>1.NBT.1 Count to 120 beginning with any number; read and write numerals and represent numbers with objects within this range</p> <p>2.NBT.3 Read and write numbers to 1,000 using base-ten numerals, number names, and expanded form</p>
Critical Background Knowledge	
<ul style="list-style-type: none"> Use a writing tool to reproduce or trace a given shape 	
Academic Vocabulary	
number, numeral, number names zero to twenty, count, represent, write	
Suggested Models	Suggested Strategies
<p>Match a counted set of objects with a numeral</p> 	<ul style="list-style-type: none"> Write/reproduce numerals in the air, in sand, in clay, on whiteboards, etc. Use the calculator for numeral recognition and to develop familiarity with numerals Practice writing the numerals from 0 to 20 in sequential and random order after teacher modeling Move between number names, numerals, and pictured sets Identify a number between 1 and 20 on a number line or hundreds chart, then reproduce that number Lead the class to count the objects in a set, then instruct the students to write the number of objects counted Have student roll a dot or number die and then record the number on paper (roll and write)

Count to tell the number of objects (Standards K.CC. 4–5)	
<p>Standard K.CC.4. Understand the relationship between numbers and quantities; connect counting to cardinality.</p> <p>a. When counting objects, say the numbers in the standard order. Pair each quantity of objects with one and only one number, and each number with the correct quantity of objects.</p> <p>b. Understand that the last number said represents 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. Understand that each successive number refers to a quantity that is one greater than the previous number.</p>	
Concepts and Skills to Master	
<ul style="list-style-type: none"> ● Attend to one-to-one correspondence ● Count in the correct sequence as objects are tagged ● Count to name the total amount of the set ● Know the last object counted names the number of objects in a set ● Count in a way that all objects are included in the count (straight lines of objects are easier to count; however, over time students learn to keep track of items in a variety of patterns) ● Understand and state how many objects there would be if the set was increased by one ● Understand the number of objects in a set remains constant regardless of their arrangement or the order of the count 	
Related Standards: Current Grade Level	Related Standards: Future Grade Levels
<p>K.CC.1 Count to 100 by ones</p> <p>K.CC.2 Count forward beginning from a given number</p> <p>K.CC.3 Read and write numerals 0 to 20</p> <p>K.CC.5 Use counting to answer questions about “how many”</p> <p>K.CC.6 Use matching or counting strategies to compare groups of objects</p>	<p>1.NBT.1 Count to 120 beginning with any number; read and write numerals and represent numbers with objects within this range</p> <p>1.OA.5 Relate counting to addition and subtraction</p> <p>1.OA.6a Add and subtract within 20 using strategies such as counting on</p> <p>2.OA.2a Fluently add and subtract within 20 using mental strategies such as counting on</p> <p>2.NBT.2 Count within 1,000; skip-count by fives, tens, and hundreds</p>
Critical Background Knowledge	
● See Related Standards: Current Grade Level	
Academic Vocabulary	
set, numeral, number, number names zero to twenty, quantity, greater, more, last, count on, equal	
Suggested Models	Suggested Strategies
<p>The number 2 represents two objects. The number 3 represents three objects, which is one more than two. The number 4 represents four objects, which is one more than 3, etc.</p> <p>Four circles are counted. The last number said represents the total in the set.</p> <p>Each set of squares has four, despite the arrangement (in a line, array, or scattered).</p>	<ul style="list-style-type: none"> ● Move objects that have already been counted to keep track (color, slide, tap, drop and move objects while counting) ● Arrange objects into a line, array, circle, etc. and then count ● Group objects and then count; for example, creating a group of ten and some more ● Use tactile cards with numerals and quantity ● Reinforce that the last number name tells the count of objects by asking, “How many are there?” ● Have the students count out 4 counters. Add one more counter to the set and ask how many now? (5) Follow-up by doing the process again, but do not add the counter. . . ask “How many will there be if I add one more counter?” ● Demonstrate that each successive number has a greater value by using number cards that are quantified with pictures ● Start by counting objects that are in a straight line and then move to other arrangements to demonstrate that the number is the same regardless of the order

Count to tell the number of objects (Standards K.CC. 4–5)	
Standard K.CC.5. Use counting to answer questions about “how many.” <i>For example, 20 or fewer objects arranged in a line, a rectangular array, or circle; 10 or fewer objects in a scattered configuration. Using a number from 1–20, count out that many objects.</i>	
Concepts and Skills to Master	
<ul style="list-style-type: none"> ● Count how many objects are in a given set from 1–20 in a variety of ways such as a line, an array or scattered pattern ● Count out a given number of objects from a larger set ● Given a numeral 1–20, a student can count out a set to match the given numeral ● The number of objects in a set remains constant regardless of their arrangement or the order of the count 	
Related Standards: Current Grade Level	Related Standards: Future Grade Levels
<p>K.CC.1 Count to 100 by ones and by tens</p> <p>K.CC.2 Count forward beginning from a given number</p> <p>K.CC.4 Understand the relationship between numbers and quantities</p> <p>K.CC.6 Use matching or counting strategies to compare groups of objects</p>	<p>1.OA.5 Relate counting to addition and subtraction</p> <p>1.OA.6 Add and subtract within 20 using strategies such as counting on</p> <p>1.NBT.1 Count to 120 beginning with any number; read and write numerals and represent numbers with objects within this range</p> <p>2.OA.2 Fluently add and subtract within 20 using mental strategies such as counting on</p> <p>2.NBT.2 Count within 1,000; skip-count by fives, tens, and hundreds</p>
Critical Background Knowledge	
<ul style="list-style-type: none"> ● Rote count to 20 by ones (K.CC.1) ● Use one-to-one correspondence (K.CC.4) ● Understand the relationship between numbers and quantities (K.CC.4) 	
Academic Vocabulary	
count, set, objects, array, scattered, how many	
Suggested Models	Suggested Strategies
<ul style="list-style-type: none"> ● Ten and twenty frames ● Pictures ● Tally marks ● Objects  <p>Count sets of objects in various configurations.</p>	<ul style="list-style-type: none"> ● Provide opportunities for students to count out a certain number of objects such as keys, pompoms, pennies, or traditional counting manipulatives, moving objects as they count ● Number Talks: Discuss and create representations with dot cards, number racks, ten frames, twenty frames, etc. ● Number of the Day: Create a set of objects from the named number

Identify and compare quantities of objects and numerals (Standards K.CC.6–7).	
Standard K.CC.6. Use matching or counting strategies to identify whether the number of objects in one group is greater than, less than, or equal to the number of objects in another group. Include groups with up to ten objects.	
Concepts and Skills to Master	
<ul style="list-style-type: none"> ● Match objects in two different groups to identify which group has a number of objects greater than, less than, or equal to the other ● Count objects in two different groups to identify which group has a number of objects greater than, less than, or equal to the other ● Identify if a group of ten or less has greater than, less than, or equal quantities to another group of ten or less ● Distinguish the difference between the meanings of <i>more</i> and <i>less</i> ● Recognize that a collection with a higher count has more things in it than a collection with a lower count <p>Teacher Note: Ensure that the size of objects in each group are identical. Students should not be expected to use or recognize the $>$, $=$, and $<$ symbols when comparing numbers.</p> <p>“Children have many opportunities to use the word <i>more</i>, but have limited exposure to the word <i>less</i>. To help children with the concept of <i>less</i>, frequently pair it with <i>more</i> and make a conscious effort to ask “Which is less?” questions as well as “Which is more?” questions. ... Children should construct sets using counters as well as make comparisons or choices (Which is less?) between two given sets.” (Van de Walle, J. A, Karp, K., & Bay-Williams, J. M. (2013). <i>Elementary and middle school mathematics: teaching developmentally</i>. 8th ed. / Boston: Pearson. pp. 134)</p>	
Related Standards: Current Grade Level	Related Standards: Future Grade Levels
<p>K.CC.7 Compare two numbers between 1 and 10 presented as written numerals using “greater than,” “less than,” or “equal to”</p> <p>K.MD.2 Directly compare two objects with a measurable attribute in common, to see which object has “more of/less of” the attribute</p> <p>K.MD.3 Classify objects into given categories; count the numbers of objects in each category and sort by count</p>	<p>1.OA.1 Use addition and subtraction within 20 to solve word problems involving situations of comparing</p> <p>1.NBT.3 Compare two two-digit numbers using the $>$, $=$, and $<$ symbols</p> <p>1.MD.4 Compare data with up to three categories by asking and answering questions about how many more or less are in one category than in another</p> <p>2.NBT.4 Compare two three-digit numbers using the $>$, $=$, and $<$ symbols</p>
Critical Background Knowledge	
<ul style="list-style-type: none"> ● Understand the relationship between numbers and quantities; connect counting to cardinality (K.CC.4) ● Use counting to answer questions about “how many” (K.CC.5) 	
Academic Vocabulary	
compare, more, more than, most, greater, greater than, less, less than, least, fewer, fewer than, equal, same as, set, group	
Suggested Models	Suggested Strategies
	<ul style="list-style-type: none"> ● Line up two groups of counters parallel to each other, so that opposing partners may be matched to identify if the first group is more than, less than, or equal to the second group ● Count two groups of objects independently to determine if the first group is more than, less than, or equal to the second group ● Construct a group that is greater than, equal to, or less than a given group ● Defend an answer and justify why a group contains more than, less than, or an equal amount compared to another group ● Use 5-frames and/or 10-frames to compare two groups ● Using 5-frames, 10-frames, or other visual representations of a set, ask students to find a classmate with either greater than, less than, or equal to their own representation
Image Source: Van de Walle, J. A, Karp, K., & Bay-Williams, J. M. (2013). <i>Elementary and middle school mathematics: teaching developmentally</i> . 8th ed. / Boston: Pearson. pp. 135)	

Identify and compare quantities of objects and numerals (Standards K.CC.6–7).	
Standard K.CC.7. Compare two numbers between 1 and 10 presented as written numerals using “greater than,” “less than,” or “equal to.”	
Concepts and Skills to Master	
<ul style="list-style-type: none"> • Understand that two numerals between 1 and 10 represent quantities that can be compared • Compare two written numerals (1-10) using greater than, less than or equal to <p>Teacher Note: Ensure that the size of objects in each group are identical. Students should not be expected to use or recognize the $>$, $=$, and $<$ symbols when comparing numbers.</p> <p>“Children have many opportunities to use the word <i>more</i>, but have limited exposure to the word <i>less</i>. To help children with the concept of <i>less</i>, frequently pair it with <i>more</i> and make a conscious effort to ask “Which is less?” questions as well as “Which is more?” questions.” (Van de Walle, J. A, Karp, K., & Bay-Williams, J. M. (2013). <i>Elementary and middle school mathematics: teaching developmentally</i>. 8th ed. / Boston: Pearson. pp. 134)</p>	
Related Standards: Current Grade Level	Related Standards: Future Grade Levels
<p>K.MD.2 Directly compare two objects with a measurable attribute in common, to see which object has “more of”/“less of” the attribute</p> <p>K.CC.6 Use matching or counting strategies to identify whether the number of objects in one group is greater than, less than, or equal to the number of objects in another group</p>	<p>1.OA.1 Use addition and subtraction within 20 to solve word problems involving situations of comparing</p> <p>1.OA.7 Understand the meaning of the equal sign, and determine whether equations involving addition and subtraction are true and false</p> <p>1.NBT.3 Compare two two-digit numbers based on meanings of the tens and ones digits, recording the results of comparison with the symbols $>$, $=$, $<$</p> <p>1.MD.4 Compare data with up to three categories by asking and answering questions about how many more or less are in one category than in another</p> <p>2.NBT.4 Compare two three-digit numbers using the $>$, $=$, and $<$ symbols</p>
Critical Background Knowledge	
<ul style="list-style-type: none"> • Understand the relationship between numbers and quantities; connect counting to cardinality (K.CC.4) • Use counting to answer questions about “how many” (K.CC.5) • Use matching or counting strategies to identify whether the number of objects in one group is greater than, less than, or equal to the number of objects in another group (K.CC.6) 	
Academic Vocabulary	
compare, more, more than, most, greater, greater than, less, less than, least, fewer, fewer than, equal, same as, set, group, numeral	
Suggested Models	Suggested Strategies
	<ul style="list-style-type: none"> • Use a number line or hundreds chart to visually compare two numbers between 1 and 10 • Use two number cards, dice, spinners, or number generators to compare numbers between 1 and 10 (see model to the left) • Quantify two numbers and compare quantities to determine which number is greatest

Additional Teacher Notes on Counting and Cardinality

Counting Principles:

- There is an **ordered sequence of counting numbers**, and numbers are always assigned to items in a collection in the same order starting with one.
- **The one-to-one principle.** Exactly one number from the counting sequence is assigned to each item in the collection.
- **The cardinal principle.** The last number in the counting sequence assigned to the collection represents the number of objects in the collection.

(Carpenter, T. P., Franke, M. L., Johnson, N.C., Turrou, A. C., & Wager, A. A. (2016). *Young children's mathematics: Cognitively guided instruction in early childhood education*. Portsmouth, NH: Heinemann. p. 9)

- **Hierarchical Inclusion** is the idea that numbers build by exactly one each time and nest within each other by this same amount.
- **Subitize** is to perceive up to four objects without doing any mathematical thinking.

(Fosnot, C.T. & Dolk, M. (2002). *Young mathematicians at work: Constructing number sense, addition, and subtraction*. Portsmouth, NH: Heinemann Press. pp. 35–36)

“The counting principles develop concurrently and in relation to children’s experiences and existing understandings. The counting principles do not develop in a set order in the same ways for all children. This means that not all children will learn the counting sequence before understanding one-to-one correspondence or understand one-to-one correspondence before developing the cardinal principle. However, we do see that each and every child comes to preschool with some knowledge and understanding of counting. Finding out what children know requires first attending to each child and the range of counting principles and his use of counting.” (Carpenter, T. P., Franke, M. L., Johnson, N.C., Turrou, A. C., & Wager, A. A. (2016). *Young children's mathematics: Cognitively guided instruction in early childhood education*. Portsmouth, NH: Heinemann. p. 34)