**Handfuls of Counting**

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| In this lesson, students will connect the oral number word and numeral to sets of objects counted. As they rote count, students will understand the concept that each successive number includes all the previous numbers (cardinality).  |

**NC Mathematics Standard(s):**

**Know number names and the counting sequence.**

**NC.K.CC.1** Know number names and recognize patterns in the counting sequence by:

* Counting to 100 by ones.
* Counting to 100 by tens.

**Count to tell the number of objects.**

**NC.K.CC.4** Understand the relationship between numbers and quantities.

* When counting objects, say the number names in the standard order, pairing each object with one and only one number name and each number name with one and only one object (one-to-one correspondence).
* Recognize that the last number named tells the number of objects counted regardless of their arrangement (cardinality).
* State the number of objects in a group, of up to 5 objects, without counting the objects (perceptual subitizing).

**NC.K.CC.5** Count to answer “How many?” in the following situations:

* Given a number from 1–20, count out that many objects.
* Given up to 20 objects, name the next successive number when an object is added, recognizing the quantity is one more/greater.
* Given 20 objects arranged in a line, a rectangular array, and a circle, identify how many.
* Given 10 objects in a scattered arrangement, identify how many.

**Standards for Mathematical Practice:**

6. Attends to precision.

7. Looks for and makes use of structure.

8. Look for and express regularity in repeated reasoning.

**Student Outcomes:**

* I can rote count using the correct number sequence.
* I can recognize that each number in the counting sequence includes all previously counted numbers (hierarchical inclusion – within 4, there is 3, 2, 1)
* I can use one-to-one correspondence to count a collection.
* I can recognize that the last number counted tells the total amount in a collection (cardinality).

I can connect the oral number word and symbol with a collection

**Materials:**

* One or two tubs of manipulatives per table
* One set of large number cards (0-10) for whole group modeling
* A piece of construction paper, felt squares (reduces noise) or shelf liner to be used as a “math mat” during exploration (per student)

**Advance Preparation**:

Material Preparation

Gather materials as listed above

Thinking Preparation

* Review standards for mathematical practice listed above so you intentionally include them in this lesson.
* Review the critical ideas so students to connect this lesson with representing, relating, and operating on whole numbers, initially with sets of objects.
* Anticipate misconceptions as listed below.

**Directions:**

1. Gather students on the carpet.
2. Teacher selects a group of ten or less students to stand based on a specific attribute (e.g., students wearing shorts, pants, red socks, etc.)
3. Tell students we are working on answering the question “How many?” Ask students “How can we find the answer?” Have a class discussion that generates the strategy of counting by ones.
4. Cluster selected students on one side of the carpet. Teacher models how to count the group.
	1. As I count, I will say one number for every child I count.
	2. Teacher will model counting using one-to-one correspondence.
		* Model counting by saying each number aloud.
		* Move each student to a different part of the room as he/she is counted.
		* Occasionally, stop and recount to ensure correct counting sequence. “Let me recount… I have 1, 2, 3 students in the group that I have counted. Next is 4 (move and count the fourth student).”
		* Explain that a counting strategy we can use today and every day is to “move and count”. This helps us know which items have been counted.
5. Gather a new group of students based on a different attribute, and have a student model the counting process (teacher assists as needed). Repeat 2 to 3 additional times as needed.

*\*Teacher note: If students seem confident with the task, number cards can be added to the counting process. As each student is counted, he/she displays the corresponding numeral. This will allow students to make connections multiple representations for a quantity (set of objects, number words, numerals).*

1. Tell students that they will now work at their tables to answer the same question, “How many?”
2. Students can return to work spaces, and take one-handful out of container of manipulatives and count using the strategy modeled during the lesson. Students should utilize the “move and count” strategy as the count, moving their counted manipulatives from one side of the mat to the other.

*\*Teacher note: This process enables students to keep track of which objects are counted and are yet to be counted (NC.K.CC.4).*

1. Another strategy for finding “How many?” is to recount. After counting, moving, and recounting all manipulatives, students should return the handful to the tub, take another handful, and repeat the process.
2. After five to seven minutes have students return to the carpet. Use “after questions” to discuss process used to count the handfuls.

**Questions to Pose:**

Before:

* How can we find out how many?
* What does it mean to count?
* How do I count?

During:

* What are some answers that would not make sense when answering “how many”?
* What methods can be used to solve the problem/answer the question?
* What are possible strategies that you could use for counting (one to one correspondence, creating a new group of “counted objects”, etc.)
* How did you get your answer?

After:

* How can you explain your strategy and answer to someone else?
* What did you learn that you did not know before?

**Possible Misconceptions/Suggestions:**

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| **Misconceptions** | **Suggestions** |
| Student has difficulty with rote counting. | Teacher can decrease the total number of items counted.  |
| A student has difficulty with one to one correspondence  | Teacher should frequently model beginning with one cluster and as each manipulative is counted, it is moved to a new counted cluster.  |

**Special Notes:**

* Prior to this lesson, students engage in several lessons focusing on perceptual subitizing.
* This lesson can be repeated throughout the year as students are ready for larger quantities and acquire more strategies.
* To build an understanding of five, students can create groups of 5 on a five frame and count how many groups of five ones.
* To count by tens, students can create groups of ten ones on a ten frame and count how many groups of ten ones.
* Students should be encouraged to practice this skill in the real world situations of snack, recess, playing with blocks, etc. (As I set the table for 3 people, each person needs 1 plate (1, 2, 3).
* Acquiring a sense of number establishes a general intuition about numbers and their relationships and is the foundation for learning mathematics with understanding. Children develop a sense of number through their experiences. According to Steffe, et al (1988) interpreting a number requires three pieces of information: a known collection; the word that represents the numerical value of the collection; and, the symbol used to record the number word. These three “bits” of

information comprise six relationships. Children must know these relationships for each number they learn. When students see a number they must have a conceptual vision of a collection of objects that match the number and the number word that refers to that conceptual unit. This is the beginning of unitizing. Understanding these six relationships is neither a simple nor an insignificant contribution to the mathematical success of students. The foundation for this complex and essential understand begins in the early years of a child’s mathematical development. The North Carolina Mathematics Standards assign to kindergarten the responsibility for teacher counting and cardinality, the beginning of number sense. Therefore, teachers at this level must help students create “mind pictures” of the quantity of a number, its number word, and the corresponding collection

**Solutions:**

Initially, all solutions should be focused on quantities ten or less.