

NVACS: Counting and Cardinality

In Kindergarten, students must:

K.CC.1 - Count to 100 by ones and by tens.

K.CC.2 - Count forward beginning from a given number within the known sequence (instead of having to begin at 1).

K.CC.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).

K.CC.4a - Understand the relationship between numbers and quantities: connect counting to cardinality. 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.

K.CC.4b - Understand the relationship between numbers and quantities: connect counting to cardinality. Understand 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.

K.CC.4c - Understand the relationship between numbers and quantities: connect counting to cardinality. Understand that each successive number name refers to a quantity that is one larger.

K.CC.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.

K.CC.6 - Identify whether the number of objects in one group is greater than, less than, or equal to the objects in another group, e.g., by using matching and counting strategies for groups up to ten objects.

K.CC.7 - Compare two numbers between 1 and 10 presented as written numerals.

Counting in kindergarten is a major focus. It is the foundation for understanding the number system. There is much more to being a proficient counter than just knowing the number sequence. Students must have these essential understandings.

Know the number sequence: Students know the names and order of number words.

One-to-one correspondence: Students say one and only one number for each object.

Keeping track: Students understand the importance of knowing which objects they have counted and which ones still need to be counted and develop a system for doing so.

Cardinality (Inclusion): Students understand that the last number word said tells how many they have counted, that it includes all of the objects counted before and is not just a name for the last object.

The relationship between the numbers in the counting sequence:

Students know that the number before is one less and the number after is one more than the given number.

Subitizing: Students quickly recognize how many objects are in a small group depending its arrangement without counting and tell how many. Most kindergartners should be able to recognize any arrangement of four or less. They should also be able to recognize arrangements that they see on dice and Ten Frames for other numbers to ten.

Conservation: Students understand that no matter what order the objects are counted in or in what arrangement they are, the quantity will be the same

In order to develop these essential understandings students need many opportunities to count in meaningful ways in a variety of settings and for a variety of purposes.

Whole Class Activities: Teacher directed activities that give students practice hearing and saying the counting sequence for a variety of purposes will help students learn the counting sequence, as well as develop the other essential understandings.

For example: Counting the students in the class - Count the class in a circle, at their desks, in line to go somewhere, etc. Count them at least twice at a time and start with a different student.

- Helps practice the number sequence AND
- Provides practice developing one-to-one correspondence
- Provides an important reason to count
- Provides an opportunity to verify answer when counting twice
- Helps develop conservation – No matter which student I start with we will have the same number of students.

Independent Work: Tasks that students can work on independently give students the opportunity to work with a variety of materials and develop the idea that 5 is always five, whether I am counting cubes, blocks, color tiles, etc. These tasks should be engaging to students and have value in being repeated. They should be set up so that different students at different levels can still do the same task.

Count a given set of objects.

For example: Grab Bag Counting from *Developing Number Concepts, Book 1*

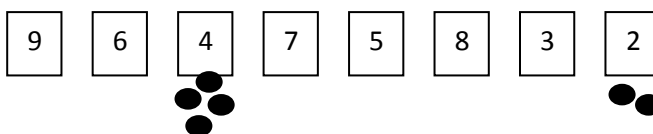
The student puts counters in a bag (paper sack or other). The student then pulls out a handful of counters and counts to find out how many. He/she puts them back in the bag and repeats.

Students who need smaller quantities to count should use larger objects so they grab fewer objects. Students who need practice counting larger sets of objects should put smaller counters in the bag.

Depending on the students levels, they can continue pulling out counters and counting or pull out counters, then count and record.

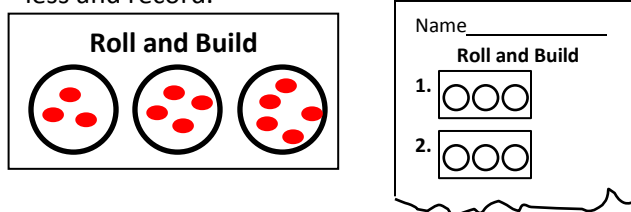
Making a set of object to match a given number

For example: Students draw 8-10 numeral cards from a deck, lay them out and build the quantities using counters to match the given numeral.



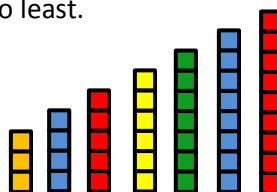
One More/One Less

For example: Students roll a die and build a set to match the quantity on the die. They then build a set that has 1 more and a set that has 1 less and record.



Compare and Order

For example: Students roll a die and build towers to match the quantity on the die. They then put the towers in order from least to greatest or greatest to least.



Connecting Symbols to the Quantity:

When students are able to count a set of objects with one to one correspondence they should have many opportunities label those sets with numerals. This connects the symbols with the quantities that they represent and gives meaning to the symbols.