

Counting Is More Than 1, 2, 3

Counting is the basis for understanding our number system and for much of the number work in the primary grades. It involves more than just knowing the number names, their sequence, and how to write each number. While it may seem simple, counting is actually quite complex and involves the interplay between a number of skills and concepts.

Rote Counting

Students need to know the number names and their order by rote; they learn this sequence—both forward and backward—by hearing others count and by counting themselves. However, just as saying the alphabet does not indicate that a student can read, being able to say “one, two, three, four, five, six, seven, eight, nine, ten” does not necessarily indicate that students know what those counting words mean. Students also need to use numbers in meaningful ways if they are to build an understanding of quantity and number relationships.

One-to-One Correspondence

To count accurately, a student must know that one number name stands for one object that is being counted. Often, when young children first begin to count, they do not connect the numbers in the “counting song” to the objects they are counting. Children learn about one-to-one correspondence through repeated opportunities to count sets of objects and to watch others as they count. One-to-one correspondence develops over time with students first counting small groups of objects (up to five or six) accurately, and then eventually counting larger groups.

Keeping Track

Another important part of counting accurately is being able to keep track of what has been counted and what remains to be counted. As students first learn to count sets of objects, they often count some objects more than once and skip others altogether. Even if they are assigning one number to each object and counting every item, some students may not know when to stop counting. Students develop strategies for organizing and keeping track of a count as they realize the need and as they see others use such strategies.

Conservation

Conservation of number involves understanding that three is always three, whether it is three objects together, three objects spread apart, or three objects in some other formation. As students learn to count, you will see many who do not yet understand this idea. They think that the more spread out the arrangement of objects, the more objects there are. Being able to conserve quantity is not a skill that can be taught; it is a cognitive process that develops as children grow and as they encounter situations that require them to consider the same quantity in various arrangements.

Connecting Numbers to Quantities

Understanding that a number describes how many objects are in a set is another important aspect of counting. Students need to know that the spoken number “four” describes a group of 4 objects and that the numeral “4” can be used to represent that quantity. When young students count accurately they are coordinating each number in the counting sequence with one object in the group. They know that when counting by ones, each time they say the next number, the quantity increases by one, and that the final number in the sequence describes the quantity of the objects in the set. Knowing what number to write to represent a quantity that has been counted, and knowing how many objects to count out when given a number, are also part of understanding number and quantity.

Counting by Groups

When dealing with large quantities, counting by groups is more efficient and less prone to errors than counting by 1s. Counting a set of objects by equal groups such as 2s, 5s, or 10s requires that each of the steps mentioned above happen again, at a different level. When counting by 2s, students need to know the rote sequence (2, 4, 6, 8, ...) and understand that each number in this count represents two objects. Each time students say a number they are adding another group of two to their count. They need to have a strategy for organizing and keeping track of the groups they have counted and know that the last number in the counting sequence answers the question “How many?” While counting accurately by 1s is the primary focus in Kindergarten, students begin to explore counting by groups in Unit 7, as they count the number of eyes in their class and the number of fingers in a group of 10 children. Counting by groups of 5 and 10 is the basis for work with place value and the base-10 number system in Grades 1 and 2.