

# Counting

## What is it?

Counting is more than repeating a rote sequence and recognizing the numerals. Learning to count while simultaneously developing a sense of quantities and number relationships is an important foundation for students. It is essential that the student understands a quantity represents the number and how numbers are related. Counting is finding out how many.



Students need to develop the following skills through multiple counting opportunities:

- correct sequence of number names
- one-to-one correspondence: Saying one number name for each object counted.
- cardinality: The last number said is the quantity counted.
- stability: The quantity of a group does not change if the objects are rearranged
- relative size: Which is more than/less than?
- make connections between number names, quantities and symbols
- counting forwards, backwards and from any starting point
- base-ten structure: How do these numbers go together? How can I count by tens and ones to find out how many?

Students need to develop an understanding of number and counting by:

- Counting forward and backwards (to 10, starting at any given number, to 100, then beyond 100)
- Counting on and back by 1, 2, 10, through decades (19-20, 40-50)
- Skip counting forward and backwards (cornerstone for multiplicative understanding)
- Identifying patterns in our place value system

## Why is it important?

Counting has proven to be important to lay the foundation for understanding of the base-ten system, operating on numbers and problem solving. When students develop competence, they not only count with accuracy and ease, but will also develop the sense of the quantity of numbers they are working with. The focus moves from knowing the number they landed on to making reasonable estimates and noting the reasonableness of the outcome of the counting. Research studies have determined that counting experience is fundamental to the construction of number sense and concepts (Baroody 1987, Sinclair and Sinclair 1986).

## What to think about?

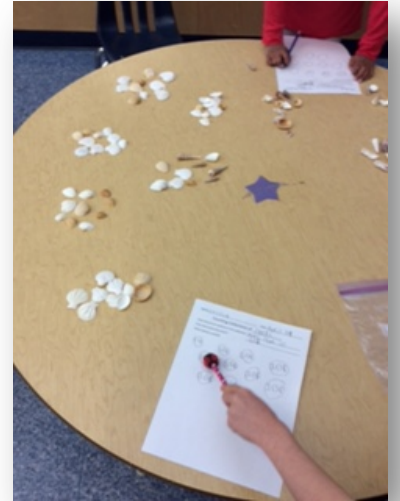
- Gather a variety of items to count.
- The size of the collection should vary. Begin with collections that might range from 25 to over 200.
- Have cups, bowls, and other containers available for grouping the items.
- Have ten frames and 100 charts available for the students to use.
- Consider how to spark provocations.  
How many...?
- What questions might you ask to 'nudge' thinking?
- How are you going to celebrate the various counting strategies?



## What to do?

Begin with a mini-lesson using a small collection of objects. Ask the students how they might count this collection. Choose a suggestion from the students and count the collection together. Provide access to cups, bowls, mats and ten frames for the students to use. Ask students; "What is important to remember when counting collections?" Students might identify the importance of keeping track of the objects, organizing them into groups, counting forwards/backwards, counting on etc. Ask students; "How might you record the count?"

After a mini lesson, invite students to investigate materials with the focus of thinking about counting the quantities. By providing baskets of objects, wooden numerals, wooden ten frames, and black felt mats, you are encouraging students to explore ways to count and strengthening their ability to connect the count the quantities. Provide a provocation such as; “How many are there? How many do you estimate? or How might you count them?” As the students are investigating, circulate, listen, watch and document the learning. Ask ‘nudging’ questions as needed.



Gather the students together to share their thinking and strategies. Record the various strategies used. Discuss the ‘uncovering’ of the math concepts.

### **What to look for?**

Provide the students with a variety of collections (i.e. shells, rocks, twigs)

- Are students able to keep track of the objects when counting?
- Do the students get the same answer when they recount?
- Are students able to accurately count the collection?
- Can the student reasonably estimate the quantity?
- Can the students count forwards, backwards and from any starting point?
- Do the students identify patterns?
- Can the students count on?
- Can the students skip count?
- Are the students able to record the count pictorially and then symbolically?
- When counting, do the students cross decades without hesitation?
- Do the students recognize relationships between numbers?



## What next?

1) If a student is having difficulty counting, reduce the quantity of objects and ensure that the student is moving the objects as they count. When students first learn to count they often think of quantities as a series of one, and another one and another one. They label each object rather than determining how many altogether. Check to see if the students can count objects with ease and accuracy and whether they know one more or one less without having to count each item. Knowing without counting is a key idea when working with addition and subtraction.



2) If a student is fluent and confident when counting, you may consider providing larger quantities for counting. Another suggestion would be to provide packages of objects and some loose parts (i.e. 7 packages of 12 pencils and 6 loose pencils) and ask the students: “How many pencils? How do you know?”



## References

Counting Collections by Julie Kern Schwerdtfeger and Angela Chan, *Teaching Children Mathematics*, March 2007, pages 356 – 361.

Number Sense Routines: Building Numerical Literacy Every Day in Grades K-3 by Jessica Shumway

## Children’s Literature

How Many Snails - *Paul Giganti Jr.*

Counting Sheep - *Kathryn Cave*

How Many Seeds in a Pumpkin? – *Margaret McNamara*

One is a Snail, Ten is a Crab - *April Pulley Sayre & Jeff Sayre*

How Many Jelly Beans? – *Andrea Menotti*