



# Counting to 20 and Representing Quantities to 5

## Key Content from This Unit:

In this unit, students count to 20 by ones and write numbers 0–5 and represent the number of objects in a group up to 5 objects. Students make connections between the quantity of 5 and a variety of representations of 5—including frames, finger patterns, and irregular dot patterns and develop an understanding of the relationship between numbers and quantities to 5.

*Counting prearranged configurations of 0 to 5 objects in a line, array, circle, or scattered group develops one-to-one correspondence.*

## Vocabulary to Know:

**Array:** A set of objects arranged in order, often in rows and columns (see the back)

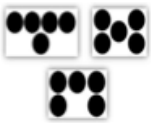
**Anchor in five:** The understanding that numbers can be thought of in relation to 5 (e.g., think of 2 as 3 less than 5 on a five frame) in order to build better number sense. This leads to anchor in 10.

**Number:** describe quantities or values, i.e., 4 is a number that is one less than 5, but one more than 3.

**Numeral:** symbols used to represent numbers, the shape itself without value, i.e., the numeral 1 is formed with a straight line down.

**One-to-one correspondence:** 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.

### SUBITIZING is “instantly seeing how many”!



Students instantly see 5 in each of these. They may see it as 4 and 1 or 3 and 2.

It is the ability to instantly see the parts and join them together to make the whole without counting. We will focus on subitizing to 5 now and to 10 later in the year. We use finger flashes and dot flashes to begin subitizing. As children progress, subitizing helps with the visualization of operations and mental math.

Your hand is a natural group of 5!!



## What came before this:

Kindergarten children enter school with a variety of skills and experiences related to counting and representing numbers.

## What comes after this:

By the end of the year, students will count to 100 by ones and tens. They will represent and write numbers 0 to 20.

## Common Core Focus:

- Counting forward to 20.
- Write numerals 0–5.
- Use concrete objects to represent numbers 0–5.
- When counting a set of objects, understand that the last number counted tells how many in the set.
- Count up to 5 objects in a line, array, circle or scattered.

K.CC.1, K.CC.3, K.CC.4a, K.CC.5

## Spotlight on the Math Practices

### *Reason Abstractly and Quantitatively*

Mathematically proficient students make sense of quantities and their relationships.

In this unit, students *reason abstractly and quantitatively* when they:

- Identify quantities 0-5 in a variety of ways.
- Write numbers to represent quantities to 5.
- Represent or model the relationship between quantities like building 4 on a five-frame and recognizing that they need one more to make 5.

## How Can You Help at Home?

- Have your child count as much as possible – the number of socks on the floor, the number of grapes at lunch, or the number of steps to the bath.
- Practice writing numerals 0-5 in tactile ways – shaving cream, sand, in a baggie of paint or gel.
- Watch to see if your child counts each object only once and counts only one object for each number name.

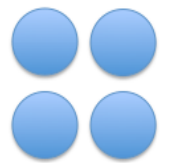
## KEY MATHEMATICAL MODELS of the COMMON CORE

### ARRAYS and FIVE-FRAMES

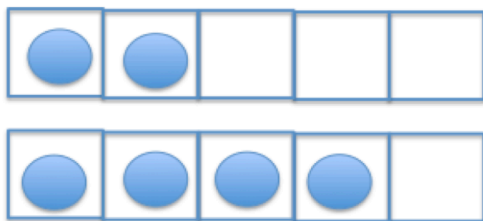
The ARRAY provides a way for children to organize objects to make them easier to quantify. This visualization is used in kindergarten to help develop one-to-one correspondence and to anchor their understanding of numbers to 5 and 10. Arrays will be used in later grades for investigating odd and even, skip counting and multiplication and division.

In an array, objects are organized into rows with an equal number of objects in each row. This organization helps students keep track of which objects they have counted and which objects they have yet to count. Five and ten-frames are an array model which is used frequently in the primary grades to develop an understanding of numbers in relation to five and ten.

The FIVE-FRAME is a 1-by-5 array of equal-sized boxes that are large enough to hold a counter or object. Objects are placed into the five-frame to provide a visual image to help students develop number sense, specifically in relation to 5 (and eventually to 10 and 20 when ten-frames and double-ten frames are introduced). The use of frames helps develop one-to-one correspondence because there is only one object per box in the frame as well as relationships between numbers because the frame makes it easy to compare the number of objects. The use of frames encourages counting strategies beyond counting by one and develops a deeper number sense, building the foundation for the development of more complex mental computation and comparison.

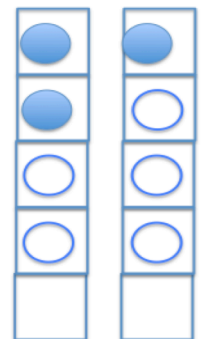


2 rows with 2 in each row is an array of 4 circles



Five-Frames make it easy to see that 2 is 3 away from 5 and 4 is only 1 away from 5. It is also easy to see that 4 is more than 2.

Five-Frames also make it easy to see equal combinations like:  
4 could be 2 and 2  
AND  
4 could be 1 and 3 OR 3 and 1.



## Some Resources to Help at Home

- Five-frame games from NCTM (note options on the left) <http://illuminations.nctm.org/Activity.aspx?id=3564>
- Information and activities for counting <http://www.k-5mathteachingresources.com/Counting-Activities.html>
- Fishy counts! <http://www.primarygames.com/math/fishycount/>