

Five Principles of Counting – How Families Can Help at Home

Accurate counting is an essential skill for children to learn from an early age. Although this may seem straightforward, there are many counting concepts that children need to master in order to become effective lifelong mathematicians. Success in mathematics begins with the development of a sense of number through counting and quantity. It may seem that children learn to count in much the same way that they learn their alphabet - by simply repeating numbers by rote. While teaching our children to count from 1 to 10, 50 to 100 or even 1000 is helpful, this skill alone is not the same as learning how to count. This Principles of Counting and Quantity Sheet is designed to help families better understand how to help their children with counting and quantity. This short video demonstrates each of the [five principles of counting](#).

1. One to One Principle	2. Stable Order Principle	3. Cardinal Principle	4. Abstraction Principle	5. Order Relevance Principle
One to One Principle Explained	Stable Order Principle Explained	Easy Activities to Practice Cardinality	Abstraction Principle Explained	Order Relevance Principle Explained
Saying number words in sequence. Tagging each object with one number word.	Counting number words are always assigned in the same order	The number of objects in a set is the last number counted	You can count anything. Even things that cannot be touched or seen.	It doesn't matter which order you count objects in, the total will always be the same
<i>Example</i> When counting a set of three ducks... 1, 2, 3 Only one duck can be number 2	<i>Example</i> When counting a set of bears 1, 2, 3, 4 the first time you can't count them 4, 2, 1, 3 the next	<i>Example</i> There are five apples in a set when you count to 5 and there are no more apples left to count	<i>Example</i> Children are able to count non-physical things such as sounds, movements or imaginary objects	<i>Example</i> Start with the top left object, bottom right or any other, there will always be the same number in the group

The cardinal value of a number refers to the quantity of how many things it represents e.g. the numerosity, 'howmanyness' or 'threeness' of three. When children understand the cardinality of numbers, they know what the numbers mean in terms of how many things they refer to.

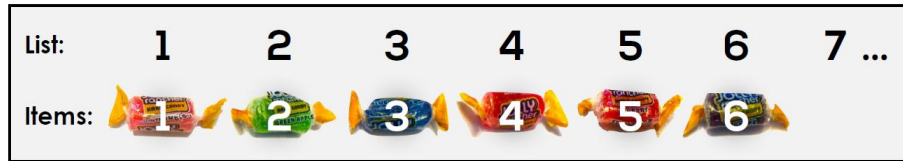
Counting is one way of establishing how many things are in a group, because the last number you say tells you how many there are. Children often enjoy counting before they understand the cardinal value of numbers. Subitising is another way of recognising how many there are, but without counting.

1. One to One Principle



The first principle of counting involves understanding that each object in a group can be counted once and only once. It is useful for children to actually touch each item being counted and to move it out of the way as it is counted. In order for students to understand and apply the one-to-one counting principle, they must be able to orally count by rote.

2. Stable Order Principle



The second principle of counting involves your child using a list of words to count in a repeatable order. We would start by rote counting from 0. To move on we might counting on from a number (i.e.: “start at 6 and count to 18”) and counting backwards. Learning to count on and count backwards will take time, but is helpful to building a deep understanding of counting and quantity.

3. Cardinal Principle



The third principle of cardinality involves your child understanding that the last number used to count a group of objects represents how many are in the group. To check if your child firmly grasps the cardinal principle, ask them to count a group of items (for this example 6). Then using the same group of objects as them to put six objects into a bag. If they have to recount the objects, they so not have a firm understanding of cardinality.

4. Abstraction Principle



The fourth abstraction principle requires an understanding that we can count any collection of objects, whether in front of us or not. For example, the quantity of five large items is the same count as a quantity of five small items or a mixed group of five small and large things. Children can consider groups of larger items to have more value than groups of smaller items. For example, a child may believe that the quantity of the 3 cars in the parking lot is larger than the 3 toy cars placed on the play mat

Children should be able to count cubes that represent some other set of objects like cars, dogs, or bikes.

5. Order Relevance Principle



The fifth principle of order relevance may seem obvious to adults, many children hold the misconception that the order you count objects does matter. Children have an understanding of order irrelevance when they are able to count a group of items starting from different places.

Five Principles of Counting – How Can I Help at Home?

Reception number to 0 to 20 Year 1 numbers to 50 (spring term) 100 (summer term) Year 2 numbers to 100 Year 3 numbers to 1000

One to One Principle

- Encouraging children to touch or move items out of the way while counting.
- Count how many items in a picture using search and find books.
- Encouraging children to represent quantities i.e.: on their fingers or using a tally chart to count and track taps on a drum, letters in a word or words in a sentence.
- Count from different numbers not just 1
- Year 2 count in 2s, 3s, 5s & 10s
- Year 3 count in 2s, 3s, 4s, 5s, 8s, 10s, 50s and 100s

If you observe two children playing with a ball. ...then ask I wonder if you could pass the ball back and forth 20 times?

Your child playing in the kitchenette with food for stuffed animals... Ask how many are they cooking for.

Stable Order Principle

- Putting pictures of items in order from smallest to largest, based on quantity
- Count forwards and backwards.
- Organise objects in order, without numbers at first, then adding the symbols later.

If you observe your child miscounting orally by rote or with objects... tell them you are going to count the same numbers and make a mistake can they tell you what number you missed.

Cardinal Principle

- Creating a set of items to match a number.
- Compare quantities using the words the same, more, fewer.
- “Show me a set of 4.” Your child builds and together you check for accuracy. Then, it is your child’s turn. He/she says, “Show me a set of 5.” You can choose if you make it currently or not to see if they spot your mistake
- Ask children to count a group of items in a set e.g., 6. Then, explicitly ask them to show you how 6 objects and see if they have to recount to represent that amount.
- Play track games to count on along the track

If you observe your child building a tower out of Lego... Ask if they can use the same amount of Lego to create a path.

Abstraction Principle

- Counting quantities that cannot be touched such as sounds, actions, words, questions or steps.
- Matching groups of different items with the same quantity.
- Children often consider groups of larger items to have more value than groups of smaller items.
- If I have 5 trucks and you have 5 blocks do we have the same number of toys?

If you observe your child playing with toys of different sizes... Take a group of 2 larger items and a group of 3 smaller items and asking which has more.

Order Relevance Principle

- Counting sets of items from left-to-right, right-to-left, top-to-bottom and bottom-to-top.
- Counting sets of unique items (different colour, shape, etc.) in a variety of orders.
- Your child counting a set of items then ask...Can you predict how many there will be if you count these items starting at this end?

If you observe your child counting a set of objects... Asking if they can predict how many cars there would be if they started counting from a different spot.