



The Five counting principles

Babies and toddlers will start counting by copying counting behaviours modelled by adults. Gelman and Gallistel (1986) describe five principles which are used when counting and can be divided into two groups: how to count and what to count:

How to count principles:

- the one-one principle, the stable-order principle, the cardinal principle

What to count principles:

- the abstract principle, the order-irrelevance principle

Counting is a fundamental skill for children to learn and master from an early age. Although this skill may seem fairly straightforward, there are many counting concepts that young children need to master and many misconceptions that can develop along the way. When a young child begins counting, they count by rote, meaning they will be able to say the number names in order simply because they have remembered the words and the order they go in. From this starting point, children then need to begin to master five counting principles. These five principles were put forward in Gelman and Gallistel's 1978 research (Gelman, R & Gallistel, C (1978)



We use material from the NCETM to enhance our daily maths sessions. <https://www.ncetm.org.uk/classroom-resources/ey-cardinality-and-counting/>

The 5 Counting Principles	
The one-one principle	<p>"I can count each object only once and say one number name for each object."</p> <p>This principle refers to the need of matching one counting word to each item in the set to be counted. Children will be encouraged to recite the counting words in order. Coordinate the touch and oral count so that they happen at the same time. Pointing to/touching items and counting is important in the process of counting as it ensures that each item is included. Keep track of items that have been counted and those that have not been. Children find it easier to move items as they count to keep track and, therefore, find counting objects easier than pictures.</p>
The stable-order principle	<p>"When I count, I say the numbers in order. This order always stays the same."</p> <p>say the counting words in order. Usually young children's counting 'string' will consist of the first few words learnt correctly, a group of correct words with some omissions followed by words chosen randomly (Fuson et al. 1982). Learning to count in the English language is complicated as it involves rote learning of words that do not have a recognisable pattern until the number fourteen. Initially children may just be chanting words memorised through rhymes and stories with it not having much meaning. Increasingly, the order of words takes meaning and children will begin to realise that the order of counting words is always the same and must always be said in this order.</p>
The cardinal principle	<p>"When I count the objects in a group, the last number I say tells me the total for the group."</p> <p>Children often learn counting as a process without understanding that the purpose is to find out the total number in the set. In other words, not realising that the final number in the count is not just identifying and labelling the last item counted but that this final number is a representation of the total number of items. The cardinal principle usually develops after the one-one principle and the stable-order principle. It is, therefore, important for adults to make the purpose of counting clear emphasising the final count is representing the total amount. Suryakham (2007) recommends the use of gesture at the end of the count to develop this understanding, for example, a circular gesture which includes the whole set and emphasis is put on the final count word.</p>
The abstraction principle	<p>"I can count anything. Even things that cannot be touched or seen."</p> <p>This principle refers to counting when children are moving on from counting objects which they can see and touch to counting through hearing and imagining items as they say the words. Most young children's counting experience is limited to using simple counting objects with most five-year-olds counting money in 'ones' irrespective of its value (Carocher and Schliemann, 1990). This limited experience can affect the development of place-value concepts at a later stage so it is important from the early years to teach pupils to use the correct number names for money, for example, this is two pence.</p>
The order-irrelevance principle	<p>"It doesn't matter which order I count a group of objects in, the total will be the same."</p> <p>Understanding that the total number in a set of objects will be the same when objects are counted in another order is a complex concept for young children to understand. Children may need to understand the cardinal principle more fully in order to develop the order-irrelevance principle. Interestingly, if a puppet is used to change the order of objects, children are more likely to realise the total amount will be the same compared to when an adult changes the order.</p>

The Reception Maths learning journey

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12	Week 13	Week 14
Autumn	Getting to Know You			Just Like Me!			It's Me 1 2 3!			Light and Dark			Consolidation	
Spring	Alive in 5!			Growing 6, 7, 8			Building 9 and 10			Consolidation				
Summer	On the Move			Superhero to 20 and Beyond			First then Now			Find my Pattern			Consolidation	

There are 10 maths phases throughout the year. Each phase lasts roughly 3 weeks.

Each phase has a number focus with suggested links to measure, shape and spatial thinking.

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9
Phase	Alive in 5!			Growing 6, 7, 8			Building 9 & 10		
Number	Introducing Zero Comparing Numbers to 5 Composition of 4 & 5			6, 7 & 8 Making Pairs Combining 2 Groups			9 & 10 Comparing Numbers to 10 Bonds to 10		
Measure, Shape and Spatial Thinking	Compare Mass (2) Compare Capacity (2)			Length & Height Time			3d-Shape Pattern (2)		

Spring planning 2021

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12
Phase	To 20 and Beyond			First Then Now			Find my Pattern			On the Move		
Number	Building Numbers Beyond 10 Counting Patterns Beyond 10			Adding More Taking Away			Doubling Sharing & Grouping Even and Odd			Deepening Understanding Patterns and Relationships		
Spatial Reasoning	Spatial Reasoning (1) Match, Rotate, Manipulate			Spatial Reasoning (2) Compose and Decompose			Spatial Reasoning (3) Visualise and Build			Spatial Reasoning (4) Mapping		

Summer planning 2021