

Boorley Park



**A Parent and Child guide to
mathematics.**



Mathematics is being
able to count to
twenty without
taking your shoes off!

Counting Principles

1

The one-one principle. This involves children assigning one number name to each object that is being counted. Children need to ensure that they count each object only once ensuring they have counted every object.

2

The stable-order principle. Children understand when counting, the numbers have to be said in a certain order.

3

The cardinal principle. Children understand that the number name assigned to the final object in a group is the total number of objects in that group.

4

The abstraction principle. This involves children understanding that anything can be counted including things that cannot be touched including sounds and movements e.g. jumps.

5

The order-irrelevance principle. This involves children understanding that the order we count a group of objects is irrelevant. There will still be the same number.

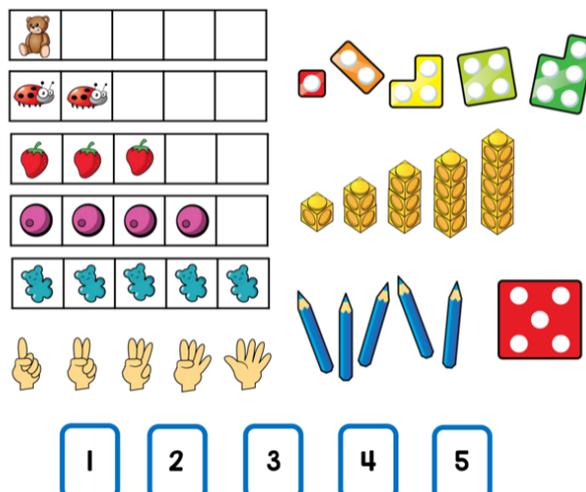
Taken from White Rose Maths document.

Place Value

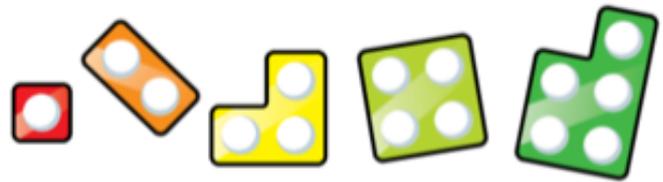
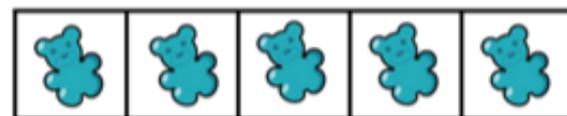
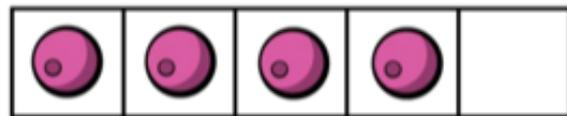
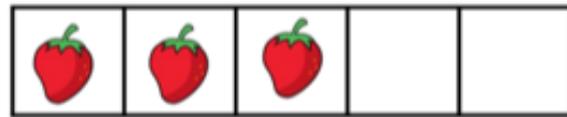
Place value is the building blocks to understanding numbers.

- Say number names in order counting forwards and backwards in ones to twenty.
- Starting with numbers to 10 match the correct numeral to a group of the same amount. When children are secure with numbers 1– 10 move on to numbers to 20.
- Read and order numerals to 20.
- Counting on and back from any given number up to 20.
- Children need to be able to compare two groups of objects using words more, less, fewer and equal.
- Recognise a small amount of objects just by looking at them and not rely on counting.
- Counting out an amount from a larger group of objects and knowing when to stop.
- Knowing that the number stays the same if none have been added or taken away.
- Knowing that the last number you say is the amount in the group.
- Being able to split whole numbers into different parts and knowing that all the parts make the whole number.
- Knowing that a number can be made in lots of different ways.

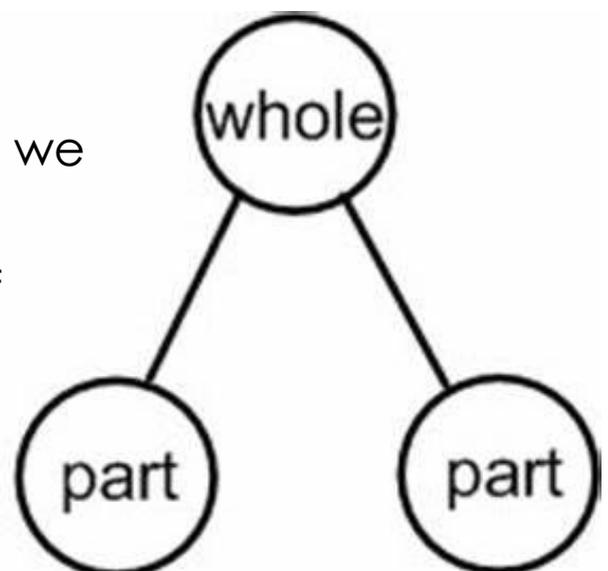
Key Representations



Key Representations



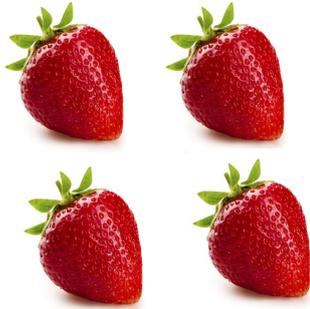
These are the key representations we use to support our children with developing their understanding of number and mathematical concepts.



1 more and 1 less

Starting with numbers to five use apparatus to find one more or one less by adding or removing an object and counting how many there are. When children are secure with numbers to five move on to numbers up to 10.

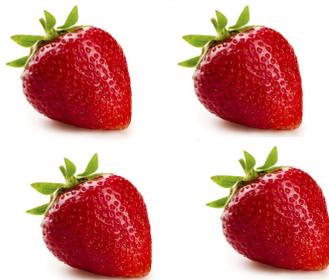
1 more



If I give you 1 more strawberry how many will you have?

Let the children put the objects together then count the total.

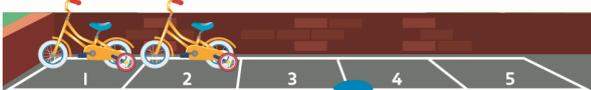
1 less



Physically take 1 away and count how many are left.

We also explore 1 more and 1 less using first, then and now stories.

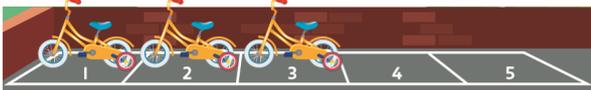
First



Then



Now



How many  are there now?

First



Then



Now



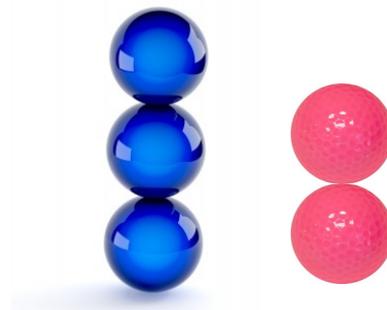
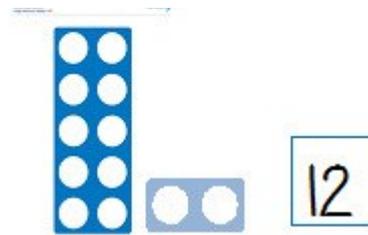
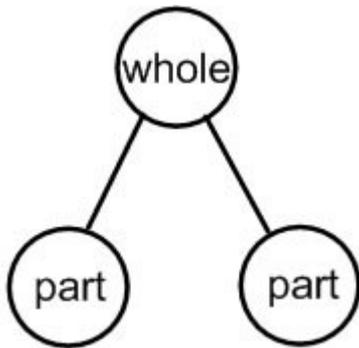
How many children are on the swings now?

When children are able to find one more or less using apparatus they then need to practise recalling the number that is one more or one less from memory.

Part, Part, Whole

Children will be encouraged to explore the value of numbers and one of the ways we do this is through a method called 'Part, Part, Whole.' This method requires the children to think about the whole number, count out that number of objects then share them into two parts. The children use this as an investigative method to find out the many different combinations that can be used to make up the same number.

There are lots of different ways to teach 'Part, Part, Whole' below are some of the methods we use:



Number bonds

Once the children are confident with the 'Part, Part, Whole' method they are encouraged to learn their number bonds to 5 then 10 by memory.

Example: Number bonds to 5

Adult says "3" and throws a ball for the child to catch then the child throws it back and says "2".

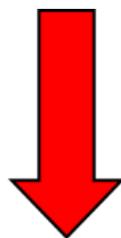
Progression in calculation methods

Apparatus

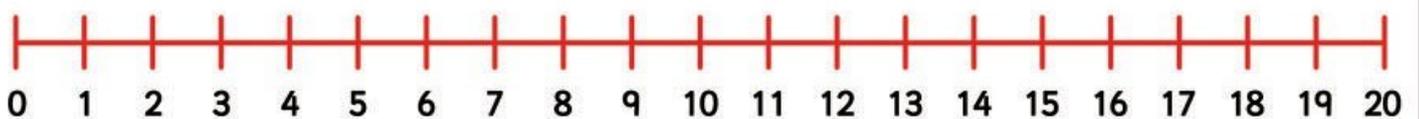
Any kind of objects
can be used.



In your head



Methods



Addition

Addition

Using numbers from 1-9; children count out two lots of objects, put them together, count how many there are altogether and talk about what they did.



Addition by counting on

When children are secure adding using apparatus they need to find the total amount of objects by counting on. Children are given a number card and a group of objects and count on from the number.

For example you want to add 5 and 3. Say the number 5, as you touch each apple count on 6, 7, 8.

A large, bold, red number 5.



A blue speech bubble with a white outline containing the text "5... 6, 7, 8".

Or you can use slap and count. Children place (slap) the largest number in their head. They then count on using their fingers.

For example you want to add 5 and 3. Slap 5 into your head. Hold up 3 fingers and count on saying 5, 6, 7, 8.



A blue speech bubble with a white outline containing the text "5... 6, 7, 8".

Some children will move on and work with numbers from 1-20. If children are confidently using the above methods to add they will begin to count on using a number line.

Subtraction

Subtraction

Using numbers from 1-9; children count out a group of objects, take some away, say how many are left and talk about what they did.



Physically take four away and count how many are left.

Subtraction by counting back

When children are secure subtracting using apparatus they move on to subtracting by counting back using numbers 1-9.

Example: 8-3



Say the number 8, as you touch each object count backwards in ones.



8... 7, 6, 5

Some children will move on and work with numbers from 1-20. If children are confidently using the above methods to subtract they will begin to subtract by counting back using a number line.

Foundations of Multiplication

Multiplication is a quick way of repeatedly adding the same number to find a total.

In Reception we teach multiplication as counting out repeated groups of objects.



Foundations of Division (sharing)

Children should be taught to understand that to divide means to share something into groups or sets. Using even numbers (2, 4, 6, 8 and 10); children share objects into equal groups or sets and count how many there are in each set.

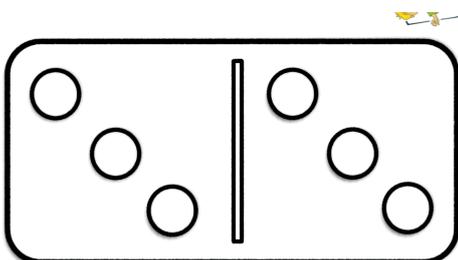
Example:

Eight objects shared between two.



Doubling and Halving

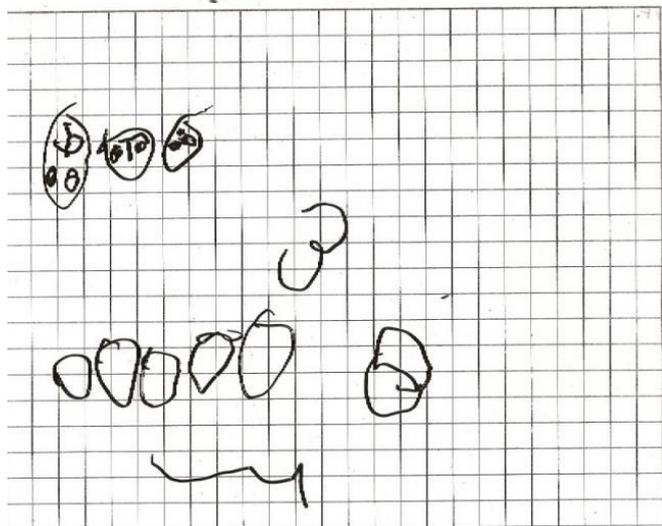
Using objects, children begin to understand that doubling is adding the same number together twice and that halving is sharing (dividing) into two equal parts.



$$3 + 3 = 6$$

Mathematical recoding in the Early Years

How can you show me what you have found out?
Encourage children to think about the mathematical process and develop their skills of reasoning and explanation.



Early Learning Goal

Children count reliably with numbers from 1 to 20, place them in order and say which number is one more or one less than a given number. Using quantities and objects, they add and subtract two single-digit numbers and count on or back to find the answer. They solve problems, including doubling, halving and sharing.

Useful websites

These websites contain some useful games that help develop a wide range of mathematical concepts. They will need to be used at your discretion as not all activities on them will be developmentally appropriate for your child.

<http://www.ictgames.com>

<http://www.topmarks.co.uk>

<http://www.crickweb.co.uk/Early-Years.html>



Numberblocks is a good and engaging way to introduce children to concepts of number through stories and to develop early mathematical understanding.



<https://www.bbc.co.uk/cbeebies/shows/numberblocks>