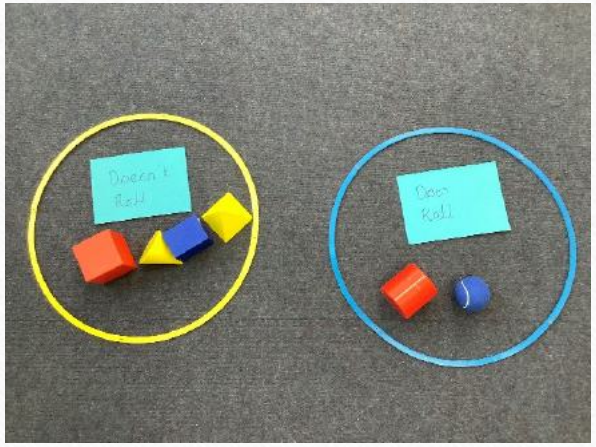


Maths in Reception

Topics

- Maths in Reception
- The importance of concrete resources
- How you can support your child's maths learning at home
- Maths in Spring and Summer terms

Mathematics ELGs

NUMBER

Children at the **expected** level of development will:

- Have a **deep understanding** of number to 10, including the **composition** of each number;
- **Subitise** (recognise quantities without counting) up to 5;
- **Automatically recall** (without reference to rhymes, counting or other aids) **number bonds up to 5** (including subtraction facts) and **some number bonds to 10**, including **double** facts.

NUMERICAL PATTERNS

Children at the **expected** level of development will:

- **Verbally count beyond 20**, recognising the pattern of the counting system;
- **Compare quantities up to 10** in different contexts, recognising when one quantity is **greater than, less than or the same as** the other quantity;
- **Explore and represent patterns within numbers up to 10**, including **evens and odds**, **double facts** and how quantities can be distributed equally.

In the Autumn term pupils will:

- identify when a set can be subitised and when counting is needed
- **subitise different arrangements**, both unstructured and structured, including using the Hungarian number frame
- **make different arrangements of numbers within 5** and talk about what they can see, to develop their conceptual subitising skills
- spot smaller numbers 'hiding' inside larger numbers
- **connect quantities and numbers to finger patterns** and explore different ways of representing numbers on their fingers
- hear and join in with the **counting sequence,** and connect this to the 'staircase' pattern of the counting numbers, seeing that each number is made of one more than the previous number
- **develop counting skills and knowledge**, including: that the last number in the count tells us 'how many' **(cardinality);** to be accurate in counting, each thing must be counted once and once only and in any order; the need for 1:1 correspondence; understanding that anything can be counted, including actions and sounds
- compare sets of objects by **matching**
- begin to develop the language of '**whole'** when talking about objects which have parts

SIX KEY AREAS OF EARLY MATHEMATICS LEARNING

Cardinality and Counting

Understanding that the cardinal value of a number refers to the quantity, or 'howmanyness' of things it represents

Comparison

Understanding that comparing numbers involves knowing which numbers are worth more or less than each other

Composition

Understanding that one number can be made up from (composed from) two or more smaller numbers

Pattern

Looking for and finding patterns helps children notice and understand mathematical relationships

Shape and Space

Understanding what happens when shapes move, or combine with other shapes, helps develop wider mathematical thinking

Measures

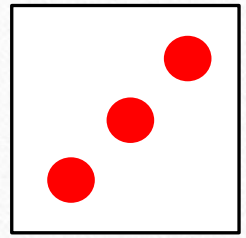
Comparing different aspects such as length, weight and volume, as a preliminary to using units to compare later

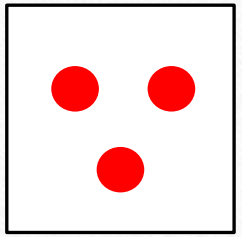
"The first few years of a child's life are especially important for mathematics development. Research shows that early mathematical knowledge predicts later reading ability and general education and social progress."

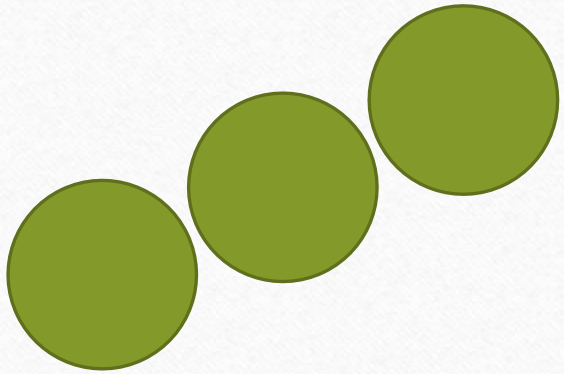
Early Years | NCETM

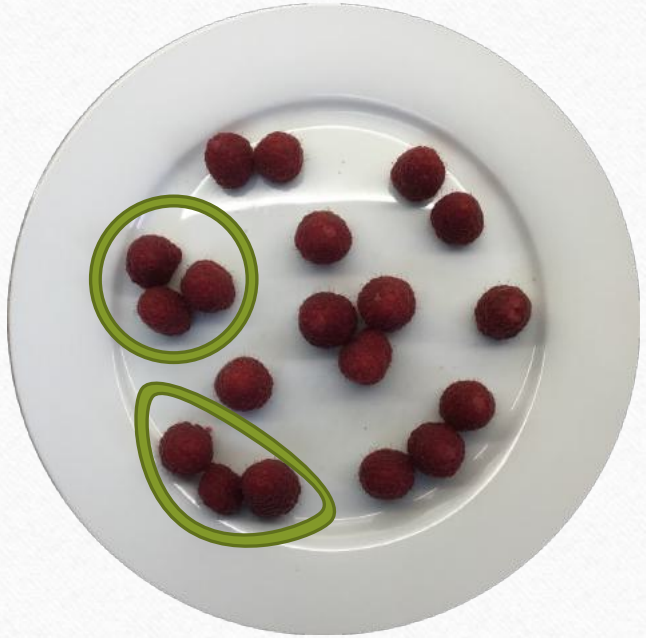
Subitising

Three!

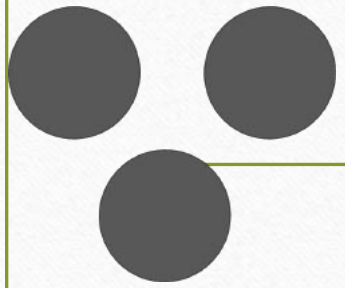


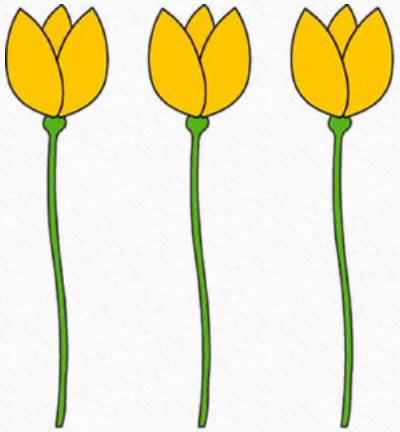


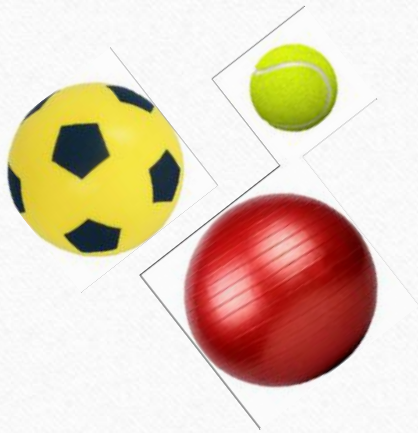




Subitising







Subject knowledge - the link between subitising and composition

Conceptual subitisation - seeing sub-groups and knowing what the whole is

I can see four ducks… because I can see two and two and that makes four!

‘Wholes’ and ‘parts’

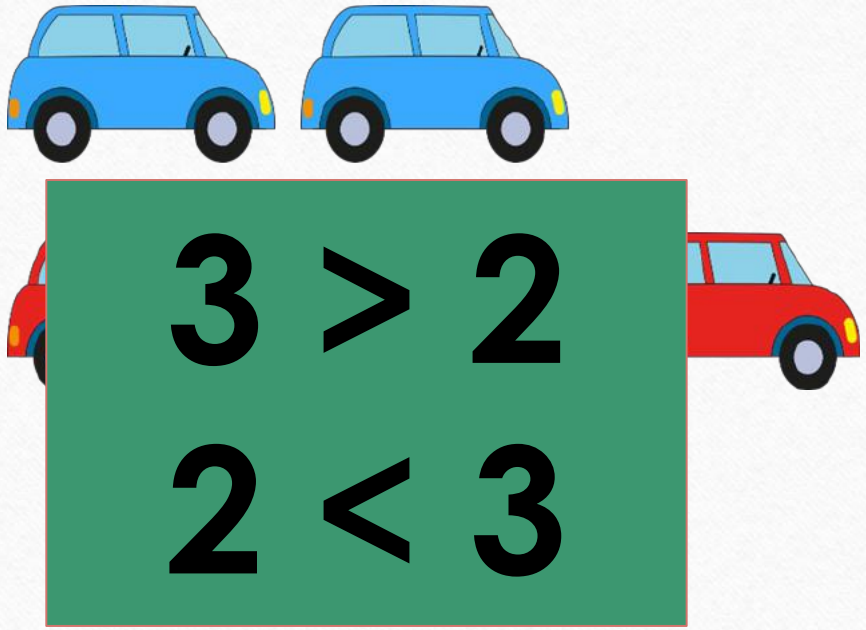
Language of comparison

A) _____ is more than _____

_____ is fewer than _____

B) _____ is greater than _____

_____ is less than _____



Equal or NOT equal?

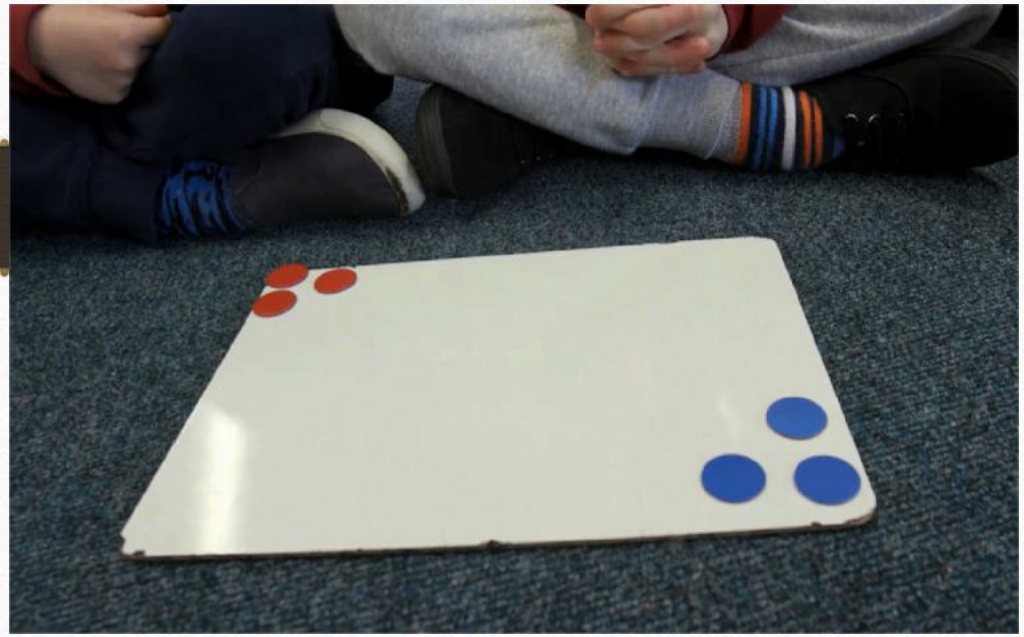
Developing counting

ELG: Numerical patterns

Verbally count beyond 20, recognising the pattern of the counting system.

Why ‘beyond 20’?

Doubles



Skills and knowledge children need to have to see this as a ‘double’:

- subitising
- comparison
- equality - seeing that each ‘part’ is the same and the parts of therefore ‘equal’
- wholes are made of parts

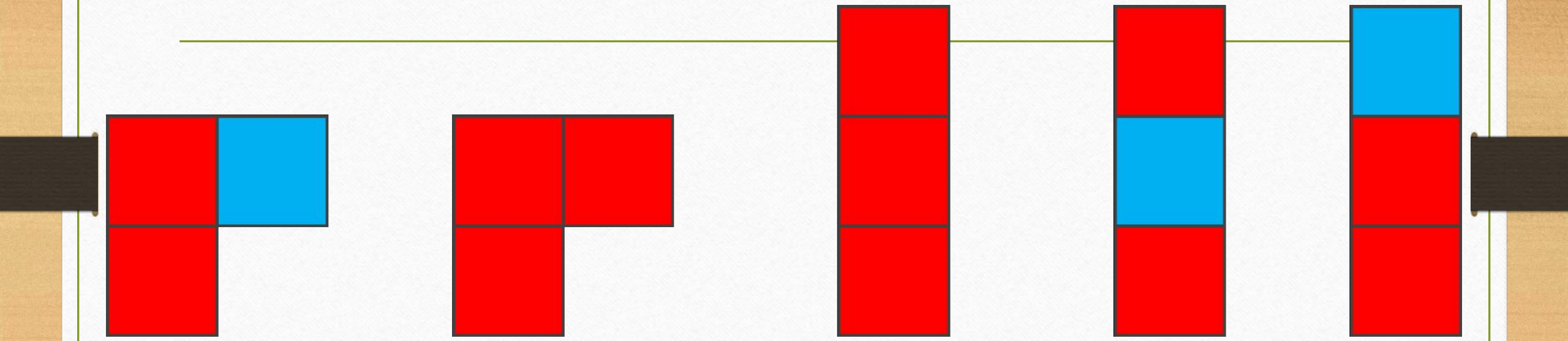
Sample small group activity

Children use 3 or 4 bl[illegible] or l[illegible] cu[illegible] onnect in different ways.

How could the use of colour develop children's thinking and their use of spatial language?

How could colour distract from their understanding?

Composition of a number



Stem sentences/generalised statements

- 5 and 1 more makes 6 altogether.
- 5 is 1 more than 4.
- My _____ is a part of me and the whole of me is [name].
- This is a double because (1) is a part and (1) is a part.
- ___ is made of ___ and ___; ___ and ___ make ___.
- _____ has more than _____ ; _____ has fewer than _____ .

The CPA Approach

CONCRETE -
using physical objects
to solve maths problems.

PICTORIAL -
using drawings
to solve maths problems.

ABSTRACT -
solving maths problems
using only numbers.

CONCRETE

Children might begin by handling real objects...

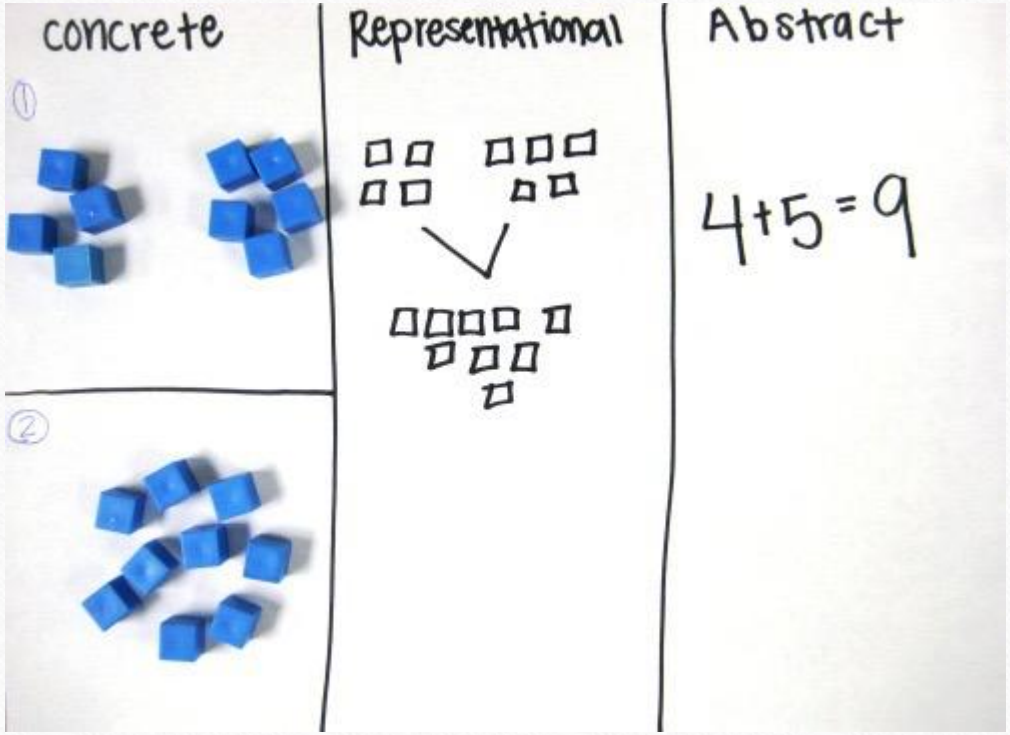
...then using physical representations of them.

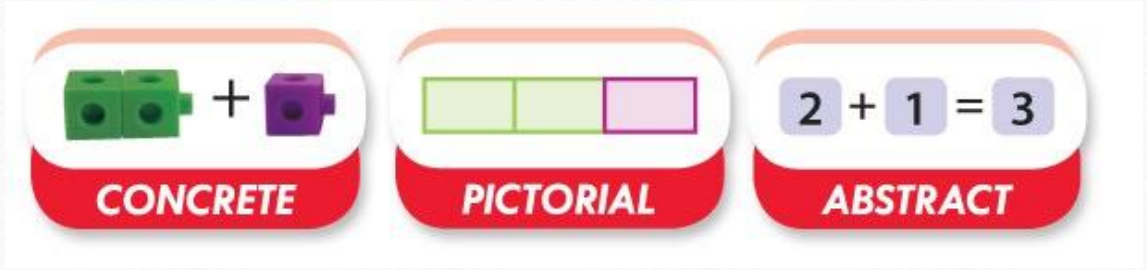
PICTORIAL

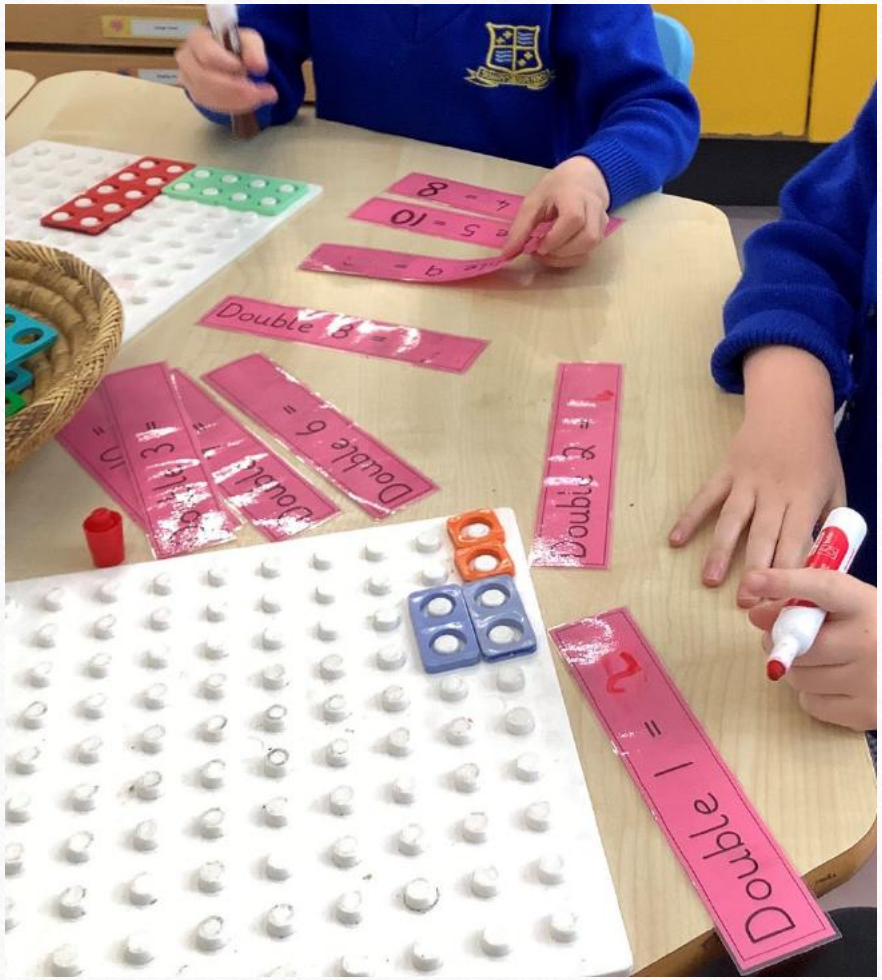
Drawings act as a bridge between the concrete objects children have been using and the abstract symbols they must learn to use.

Finally, children learn to use abstract symbols to solve problems.

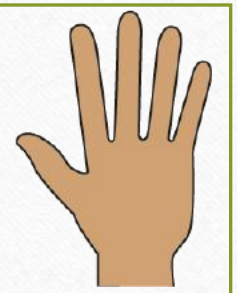
$$10 + 7 = 17$$


concrete
Representational
Abstract
4+5=9


CONCRETE
PICTORIAL
2 + 1 = 3
ABSTRACT


Double 8 =
Double 6 =
Double 1 =

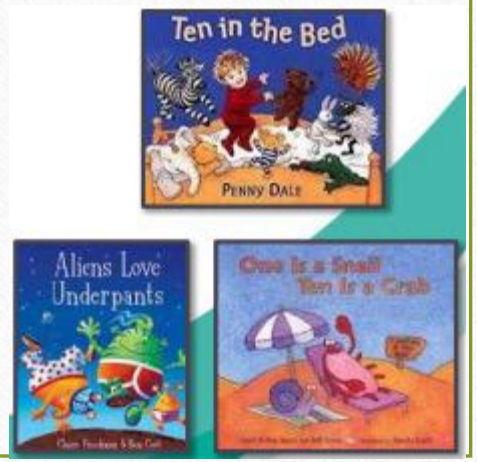
Around the home



- Provide lots of opportunities to say how many things you can see (up to 10) without counting.
- Whenever you talk about a small set of objects, say the number. For example, please pick up those 3 teddies or look at those 2 dogs.
- Count up (starting from one) when walking upstairs and count back when walking downstairs.
- Count lots of different objects, big and small, and ask 'How many are there?' Your child should be able to tell you without going back and re-counting. If they can't, then tell them: 'There are 6 altogether'. This is their **stopping number.**
- Ask your child to put their fingers down and then say or hold up a number such as 3. Can they do it without counting? Can they do it using different fingers? Can they do it using fingers from two hands?
- Play board games with your child which involve moving along numbered tracks, such as 'Snakes and Ladders'. Check that your child counts along the track correctly, moving one square for each number counted.

Around the home

- Practise saying and singing the counting numbers often. For example, can you put on your shoes before we count to five?
- Count lots of different sorts of objects, small things and big things, e.g. biscuits, shoes, people.
- Arrange objects in different ways to count them, e.g. in a line/s or in a ring.
- Move or touch objects (or cross out/draw rings around them on paper) to help you remember which ones have already been counted.
- Count things that you cannot see or touch, e.g. count claps, taps under the table, coins dropping into a pot.
- Count movements. For example, how many hops, skips or jumps can you do?



Around the home

- Notice when there are two amounts and one is more than the other, or they are the same. For example, I have 2 eyes and 2 ears, or I have more chips than peas.
- Talk about and describe shapes you can see outside or around your home. For example, count corners, talk about straight/curved edges, flat/curved surfaces. If you have building blocks then talk about and describe the things that are built.
- In the bath or at the sink, play with containers, pouring water, counting how many small pots are needed to fill the big container.
- Encourage your child to draw a picture of their number work and explain their mark-making to you, for example, how many leaves they find on a walk. This doesn't necessarily mean writing the numerals (1, 2, 3, 4… etc.).
- Sing counting songs and rhymes.
- Make a deliberate maths mistake from time to time and ask your child to explain why you are wrong. For example, say that 4 is bigger than 5.

Regular use of these simple ideas, whenever the opportunity arises, will improve your child's maths.

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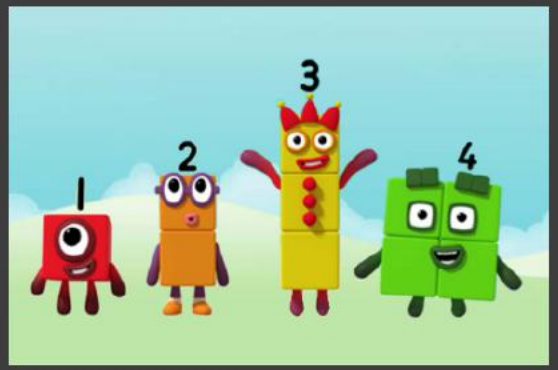
Numberblocks Support Materials > Numberblocks at home

NUMBERBLOCKS AT HOME

Resources to accompany the CBeebies Numberblocks series, designed for parents to use at home with children



Numberblocks PowerPoints designed for Early Years practitioners have been adapted into a parent-friendly format. Teachers and practitioners can send them directly to parents to provide opportunities to explore early mathematical understanding at home, in conjunction with the Numberblocks episodes currently available on the BBC iPlayer. The slides can also be customised, making the content bespoke for families and pupils.

This short video, featuring Debbie Morgan (NCETM Director for Primary, and Numberblocks consultant) explains to teachers and Early Years practitioners how to use the resources.

Phase

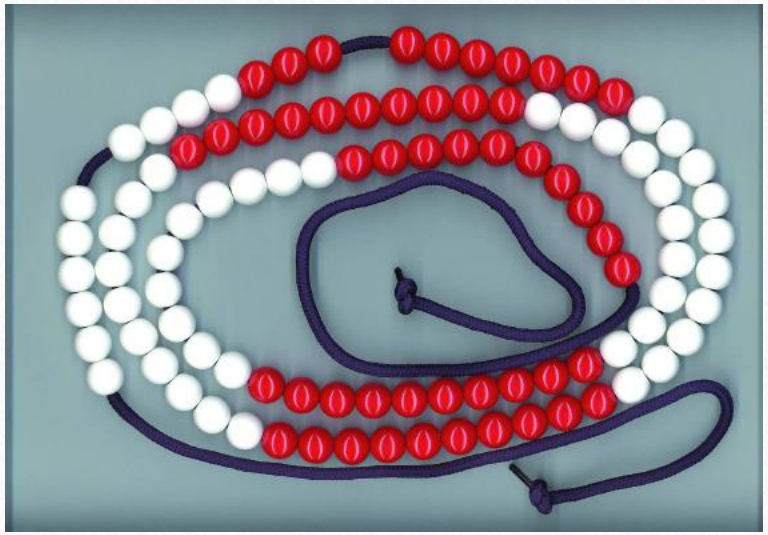
EARLY YEARS

Related Pages

Early Years

Numberblocks Support Materials

Numberblocks at home | NCETM



In the Spring term, the children will:

• continue to **develop their subitising skills** for numbers within and beyond 5, and increasingly connect quantities to numerals

• begin to **identify missing parts** for numbers within 5

• **explore the structure of the numbers** 6 and 7 as '5 and a bit' and connect this to finger patterns and the Hungarian number frame

• focus on **equal and unequal groups** when comparing numbers

•understand that two equal groups can be called a **'double'** and connect this to finger patterns

• sort **odd and even numbers** according to their 'shape'

• continue to develop their understanding of the counting sequence and link **cardinality and ordinality** through the 'staircase' pattern

• **order numbers** and play **track games**

• join in with **verbal counts beyond 20**, hearing the repeated pattern within the counting numbers

In the summer term, the children will:

- continue to develop their **counting skills**, counting larger sets as well as counting actions and sounds
- explore a range of **representations of numbers**, including the 10-frame, and see how doubles can be arranged in a 10-frame
- **compare quantities and numbers**, including sets of objects which have different attributes
- continue to **develop a sense of magnitude**, e.g. knowing that 8 is quite a lot more than 2, but 4 is only a little bit more than 2
- begin to generalise about **'one more than' and 'one less than'** numbers within 10
- continue to **identify when sets can be subitised** and when counting is necessary
- develop **conceptual subitising skills** including when using a rekenrek

Questions