

NCETM

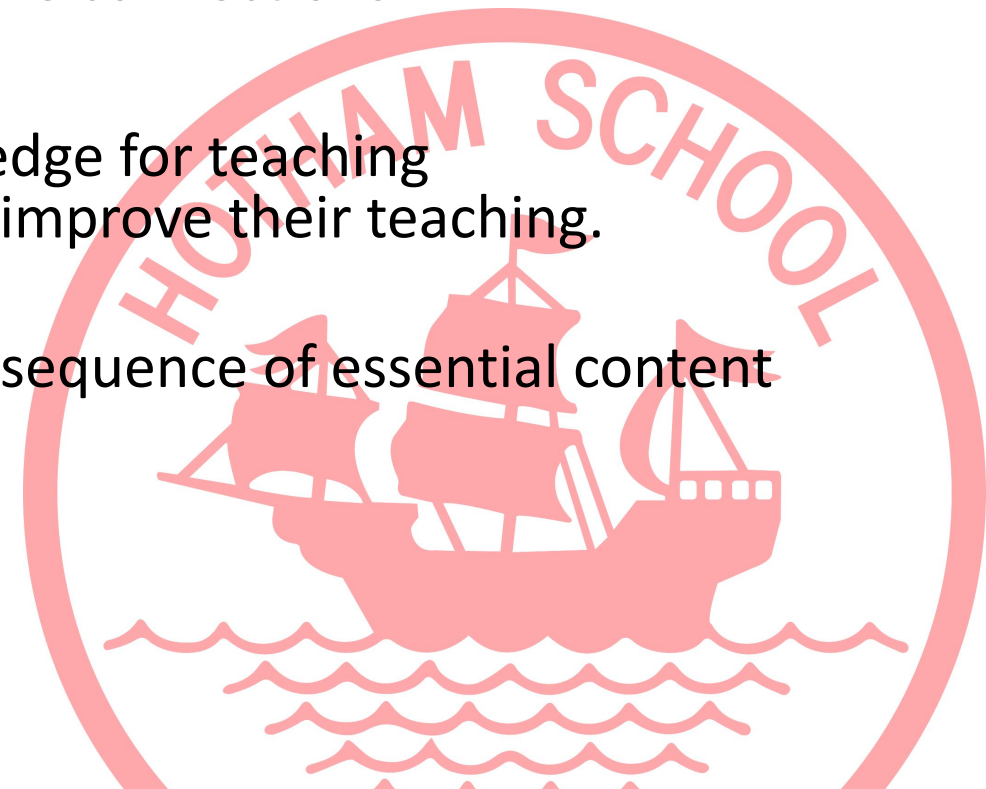
NATIONAL CENTRE FOR EXCELLENCE
IN THE TEACHING OF MATHEMATICS



Mathematics in Reception

Underpinning Principles

- Mathematics teaching for mastery assumes everyone can learn and enjoy mathematics.
- Mathematical learning behaviours are developed such that pupils focus and engage fully as learners who reason and seek to make connections.
- Teachers continually develop their specialist knowledge for teaching mathematics, working collaboratively to refine and improve their teaching.
- Curriculum design ensures a coherent and detailed sequence of essential content to support sustained progression over time.
- Lesson design



SIX KEY AREAS OF EARLY MATHEMATICS LEARNING

- Cardinality and Counting
- Comparison
- Composition
- Pattern
- Shape and Space
- Measure



Cardinality and Counting:

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

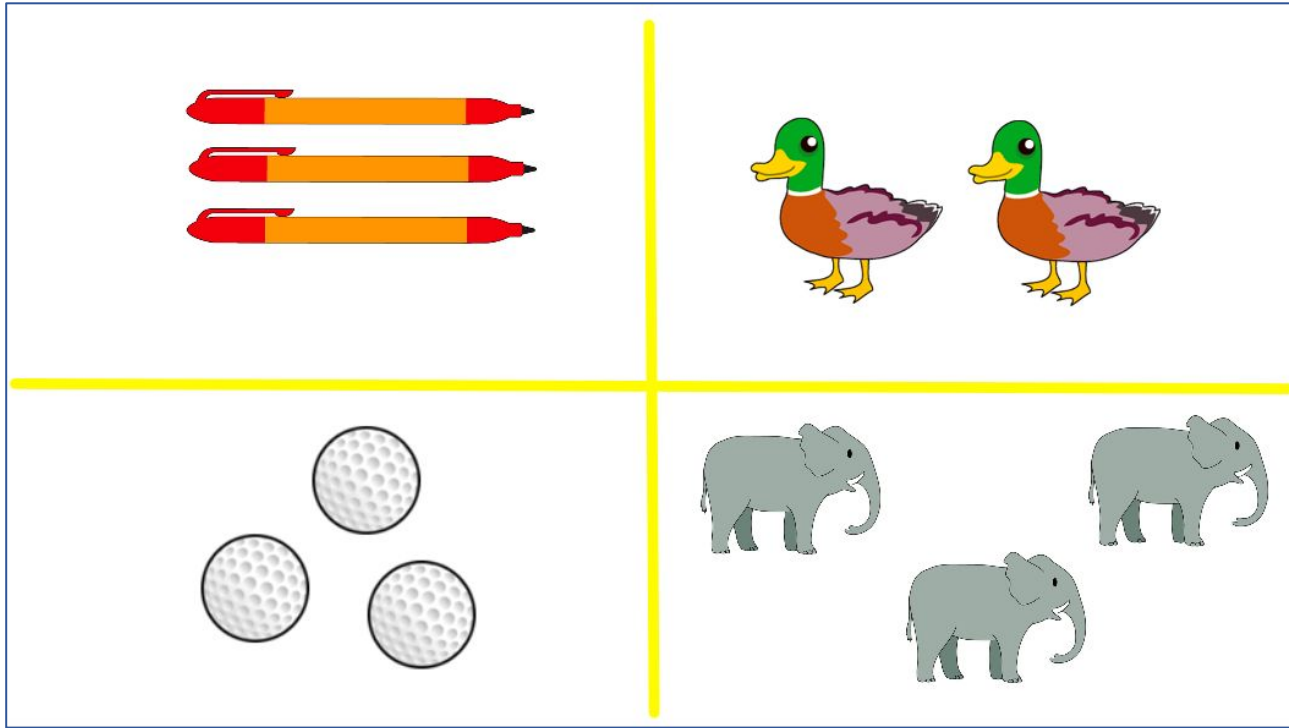
- Saying a number in sequence (and backwards)
- Children need lots of opportunities to count things in irregular arrangements.
- Knowing that the last number counted gives the total so far
- Conservation of number
- Subitising



Subitising

Subitising is recognising how many things are in a group without having to count them one by one.

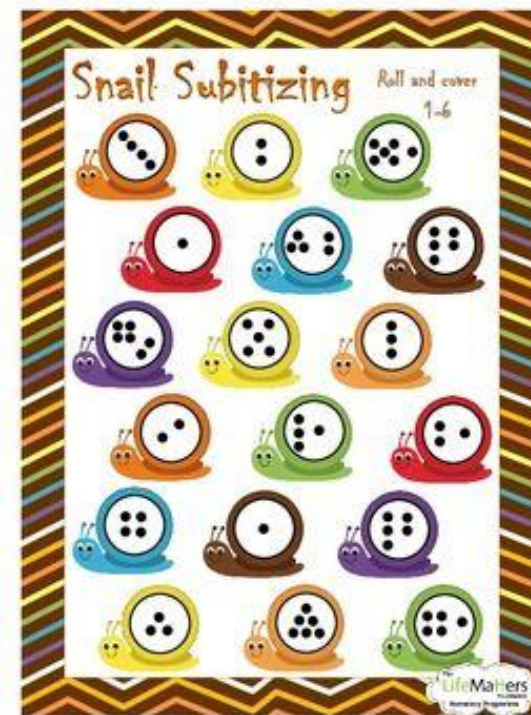
Children need opportunities to see regular arrangements of small quantities, e.g. a dice face, structured manipulatives and be encouraged to say the quantity represented. Children also need opportunities to recognise small amounts (up to five) when they are not in the 'regular' arrangement, e.g. small handfuls of objects.



Spot the mistake



Dice / Track games



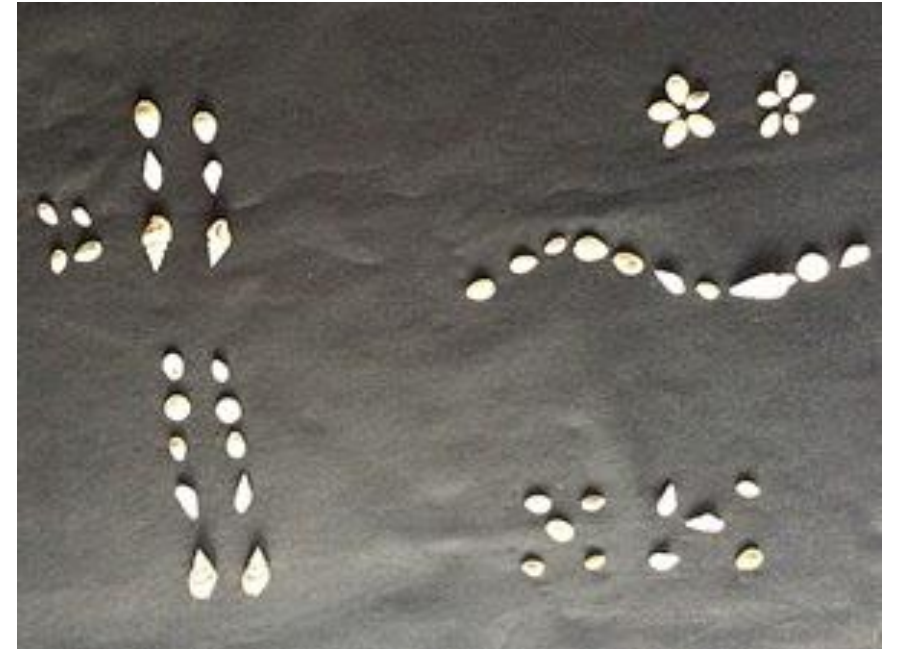
Comparison: Understanding that comparing numbers involves knowing which numbers are worth more or less than each other

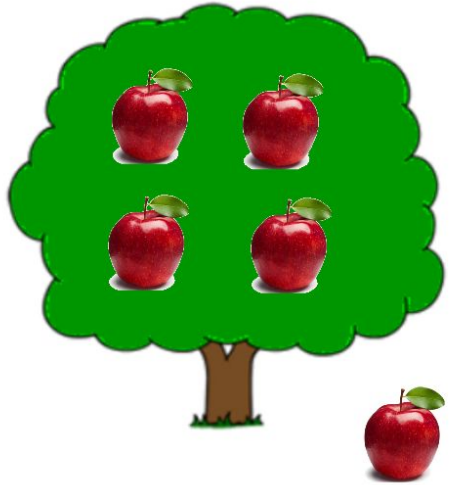
- More or less than (fewer)
- Identifying groups with the same number of things.
- Comparing and reasoning
- One more/ One less relationship



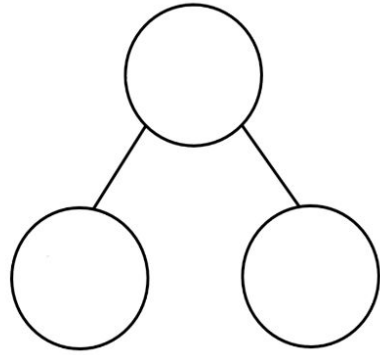
Composition: Understanding that one number can be made up from (composed from) two or more smaller numbers

- Part- Whole: identifying smaller numbers within a number
- Partition a number into two groups or more
- Number Bonds: Knowing which pairs make a given number

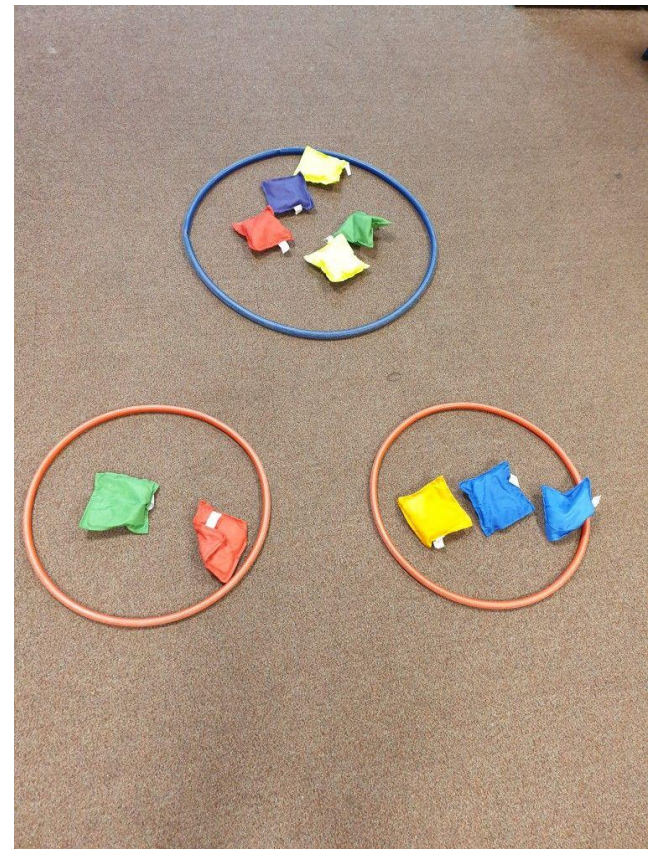
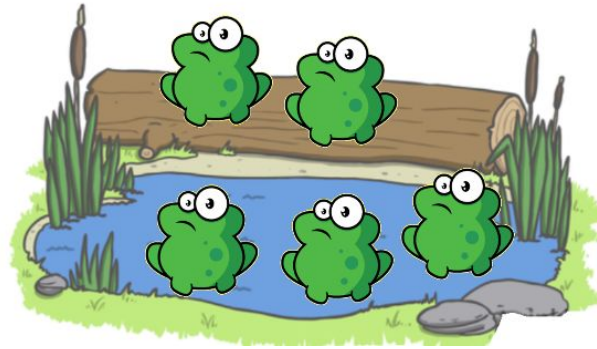




The whole is _



The parts are _ and _



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



Mathematics Overview

Strand/ Half-term	Subitising	Cardinality, ordinality and counting	Composition	Comparison
<p>1</p> <p>Children will:</p>	<ul style="list-style-type: none"> perceptually subitise within 3 identify sub-groups in larger arrangements create their own patterns for numbers within 4 practise using their fingers to represent quantities which they can subitise experience subitising in a range of contexts, including temporal patterns made by sounds. 	<ul style="list-style-type: none"> relate the counting sequence to cardinality, seeing that the last number spoken gives the number in the entire set have a wide range of opportunities to develop their knowledge of the counting sequence, including through rhyme and song have a wide range of opportunities to develop 1:1 correspondence, including by coordinating movement and counting have opportunities to develop an understanding that anything can be counted, including actions and sounds explore a range of strategies which support accurate counting. 	<ul style="list-style-type: none"> see that all numbers can be made of 1s compose their own collections within 4. 	<ul style="list-style-type: none"> understand that sets can be compared according to a range of attributes, including by their numerosity use the language of comparison, including 'more than' and 'fewer than' compare sets 'just by looking'.
<p>2</p> <p>Children will:</p>	<ul style="list-style-type: none"> continue from first half-term subitise within 5, perceptually and conceptually, depending on the arrangements. 	<ul style="list-style-type: none"> continue to develop their counting skills explore the cardinality of 5, linking this to dice patterns and 5 fingers on 1 hand begin to count beyond 5 begin to recognise numerals, relating these to quantities they can subitise and count. 	<ul style="list-style-type: none"> explore the concept of 'wholes' and 'parts' by looking at a range of objects that are composed of parts, some of which can be taken apart and some of which cannot explore the composition of numbers within 5. 	<ul style="list-style-type: none"> compare sets using a variety of strategies, including 'just by looking', by subitising and by matching compare sets by matching, seeing that when every object in a set can be matched to one in the other set, they contain the same number and are equal amounts.

Strand/ Half-term	Subitising	Cardinality, ordinality and counting	Composition	Comparison
<p>3</p> <p>Children will:</p>	<ul style="list-style-type: none"> increase confidence in subitising by continuing to explore patterns within 5, including structured and random arrangements explore a range of patterns made by some numbers greater than 5, including structured patterns in which 5 is a clear part experience patterns which show a small group and '1 more' continue to match arrangements to finger patterns. 	<ul style="list-style-type: none"> continue to develop verbal counting to 20 and beyond continue to develop object counting skills, using a range of strategies to develop accuracy continue to link counting to cardinality, including using their fingers to represent quantities between 5 and 10 order numbers, linking cardinal and ordinal representations of number. 	<ul style="list-style-type: none"> continue to explore the composition of 5 and practise recalling 'missing' or 'hidden' parts for 5 explore the composition of 6, linking this to familiar patterns, including symmetrical patterns begin to see that numbers within 10 can be composed of '5 and a bit'. 	<ul style="list-style-type: none"> continue to compare sets using the language of comparison, and play games which involve comparing sets continue to compare sets by matching, identifying when sets are equal explore ways of making unequal sets equal.
<p>4</p> <p>Children will:</p>	<ul style="list-style-type: none"> explore symmetrical patterns, in which each side is a familiar pattern, linking this to 'doubles'. 	<ul style="list-style-type: none"> continue to consolidate their understanding of cardinality, working with larger numbers within 10 become more familiar with the counting pattern beyond 20. 	<ul style="list-style-type: none"> explore the composition of odd and even numbers, looking at the 'shape' of these numbers begin to link even numbers to doubles begin to explore the composition of numbers within 10. 	<ul style="list-style-type: none"> compare numbers, reasoning about which is more, using both an understanding of the 'howmanyness' of a number, and its position in the number system.

Strand/ Half-term	Subitising	Cardinality, ordinality and counting	Composition	Comparison
<p>5</p> <p>Children will:</p>	<ul style="list-style-type: none"> continue to practise increasingly familiar subitising arrangements, including those which expose '1 more' or 'doubles' patterns use subitising skills to enable them to identify when patterns show the same number but in a different arrangement, or when patterns are similar but have a different number subitise structured and unstructured patterns, including those which show numbers within 10, in relation to 5 and 10 be encouraged to identify when it is appropriate to count and when groups can be subitised. 	<ul style="list-style-type: none"> continue to develop verbal counting to 20 and beyond, including counting from different starting numbers continue to develop confidence and accuracy in both verbal and object counting. 	<ul style="list-style-type: none"> explore the composition of 10. 	<ul style="list-style-type: none"> order sets of objects, linking this to their understanding of the ordinal number system.
<p>6</p>	<p>In this half-term, the children will consolidate their understanding of concepts previously taught through working in a variety of contexts and with different numbers.</p>			