

# The Maths Curriculum at Hindhayes

## Maths - Number and Place Value

### Hooked on Thinking



### Working With and For Local Families

**Recent research shows us that:** 'Number sense develops gradually over time as a result of exploring numbers, visualising them in a variety of contexts, and relating them in ways that are not limited by traditional algorithms' Sood and Jitendra (2007). We follow the numbersense programme throughout key stage one, where children participate in four 15 minute number fact and fluency sessions on top of their maths lessons.

**Developing number skills at Hindhayes** - We draw on the principles of the NCETM, Gareth Metcalf's number sense work and the mastery maths approach to support our long term aim of developing robust mathematicians who have a developed understanding of number. Our approach, over time, enables children to understand the concept of 1:1 correspondence, the use of patterns to support subitising as a way to perceive the cardinality of a small set, to understand that the last number in the counting sequence represents the quantity of the set. Alongside these concepts, children develop their understanding of number symbols and representations and the vocabulary involved in comparing sets. It is therefore imperative that due time is given to the development of these skills, and as a staff we understand that to provide stretch and breadth in number we question *will that always make 5?*, we ask the children to create *tell me a story using your animals* and we provide twists *is it still 5?* We want all our year groups to have time to work with concrete materials and familiar ideas, have time to compose and recompose different arrangements and representations of number, discuss and share their discoveries and solutions, investigate the realistic uses of number in their everyday world and explore number patterns and relationships.

Essential Prior Knowledge	Development of skills	Foundation Stage	Year 1	Year 2	Year 3
<p><b>Development Matters</b></p> <p><b>3&amp;4 year olds will be learning to:</b></p> <p>Fast recognition of up to 3 objects, without having to count them individually.</p> <p>Recite numbers past 5.</p> <p>Say one number for each item in order.</p> <p>Know that the last number reached when counting a small set of objects tells you how many there are in total.</p> <p>Show finger numbers up to 5.</p> <p>Link numerals and amounts.</p> <p>Experiment with their own symbols and marks as well as numerals.</p> <p>Solve real world mathematical problems with numbers up to 5.</p> <p><i>Children are encouraged to build an interest in number within the world around them. They use their growing understanding of number to help them investigate and solve problems eg are there enough cups? Children understand that actions, sounds and pictures can be counted, not just objects.</i></p>	<p>ELG Number- Have a deep understanding of numbers to 10, including the composition of each number.</p> <p>Subitise up to 5.</p> <p>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.</p> <p>ELG Numerical Patterns- Verbally count beyond 20, recognising the pattern of the counting system.</p> <p>Compare quantities up to 10 in different contexts, recognising when one quantity is greater than, less than or the same as the other quantity.</p> <p>Explore and represent patterns with numbers up to 10, including odds and evens, double facts and how quantities can be distributed equally.</p> <p><i>Children develop skills in counting and moving objects, matching sets of objects to numerals, link number names to numerals and exploring the concept of one more and one less. The concept of cardinality is developed as children move objects around when part of a set and discover that the amount stays the same. Subitising, describing patterns and making patterns are important steps needed to secure future learning.</i></p>	<ul style="list-style-type: none"><li>- count to and across 100, forwards and backwards, beginning with 0 or 1, or from any given number</li><li>-count, read and write numbers to 100 in numerals; count in multiples of twos, fives and tens</li><li>-given a number, identify one more and one less</li><li>-identify and represent numbers using objects and pictorial representations including the number line, and use the language of: equal to, more than, less than (fewer), most, least</li><li>-read and write numbers from 1 to 20 in numerals and words.</li></ul> <p><i>Children revisit place value within 10 and explore it through concrete apparatus such as numicon plates, finger patterns and counters on tens frames. Sequencing, comparing and ordering numbers within 10 and then beyond allow children to demonstrate their growing understanding of the number system. Securing a robust understanding of teen numbers is crucial to year 1 learning. Using language patterns eg ten and one, ten and two etc to count and describe teen numbers illuminates the value of these numbers. Children also are introduced to the concept of unitising as they build numbers using groups of ten and ones. Time is needed for children to explore, interchange, question and describe how 2 digit numbers are made up. This skill is revisited through different stages of the year as children meet larger groups of numbers, money and multiplication and division.</i></p>	<ul style="list-style-type: none"><li>-count in steps of 2, 3, and 5 from 0, and in tens from any number, forward and backward</li><li>-recognise the place value of each digit in a two-digit number (tens, ones)</li><li>-identify, represent and estimate numbers using different representations, including the number line</li><li>-compare and order numbers from 0 up to 100; use &lt;, &gt; and = signs</li><li>-read and write numbers to at least 100 in numerals and in words</li><li>-use place value and number facts to solve problems.</li></ul> <p><i>Children revisit place value within 20 and apply this knowledge to investigations and problems, such as Jane is thinking of a number that is greater than 15 but less than 20, what could it be? Systematic approaches are developed to illuminate the patterns within number and to apply the facts learnt so far eg 20 can be...Links are strengthened between pairs to 10 to pairs to 20 eg if I know 1 + 9 = 10 then I also know 11 + 9 = 20. Variation of representations and calculations strengthen links between place value and addition and subtraction eg 1 + 10 = 11, 1 + 20 = 21, 1 + ____ = 31. Comparing values and reasoning about them is woven throughout the year, through units such as money and measures.</i></p>	<ul style="list-style-type: none"><li>-count from 0 in multiples of 4, 8, 50 and 100; find 10 or 100 more or less than a given number</li><li>-recognise the place value of each digit in a three-digit number (hundreds, tens, ones)</li><li>-compare and order numbers up to 1000</li><li>-identify, represent and estimate numbers using different representations</li><li>-read and write numbers up to 1000 in numerals and in words</li><li>-solve number problems and practical problems involving these ideas.</li></ul> <p><i>Year 3 teachers will use ready to progress materials and transition notes to help them secure the next steps for place value in year 3.</i></p>	

	<p>Key Vocab:</p> <p>zero, one, two, three... to twenty and beyond</p> <p>zero, ten, twenty... one hundred</p> <p>none , odd, even</p> <p>how many...?</p> <p>count, count (up) to , count on (from, to)</p> <p>count back (from, to)</p> <p>count in ones, twos... tens...</p> <p>more, less, many, few</p> <p>how many times?</p> <p>pattern, pair</p> <p>guess how many, estimate , nearly, close to,</p> <p>about the same as , just over, just under</p> <p>too many, too few, enough, not enough</p> <p><i>Comparing and ordering numbers</i></p> <p>the same number as, as many as</p>	<p>Key Vocab:</p> <p><i>units, ones , tens , exchange</i></p> <p><i>digit , 'teens' number</i></p> <p>the same number as, as many as , <i>equal to</i></p> <p><i>Of <b>two</b> objects/amounts:</i></p> <p>greater, more, larger, bigger</p> <p>less, fewer, smaller</p> <p><i>Of <b>three</b> or more objects/amounts:</i></p> <p>greatest, most, biggest, largest, least, fewest, smallest</p> <p>one more, ten more, one less, ten less</p> <p>compare, order</p> <p>first, second, third... tenth, <i>eleventh</i>...</p> <p>last, last but one</p> <p>before, after, next</p> <p>between, <i>half-way between , above, below</i></p>	<p>Key Vocab:</p> <p><i>multiple of</i></p> <p><i>sequence</i></p> <p><i>continue</i></p> <p><i>predict</i></p> <p>pattern, pair, <i>rule</i></p> <p><b>Place value and ordering</b></p> <p>units, ones, tens, <i>hundreds</i></p> <p>digit</p> <p><i>one-, two- or three-digit number</i></p> <p>'teens' number</p> <p><i>place, place value</i></p> <p><i>stands for, represents</i></p> <p><i>exchange</i></p> <p>the same number as, as many as</p> <p>equal to</p>
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