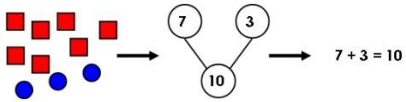
The Maths Curriculum at Hindhayes

Maths - Addition and Subtraction

Hindhayes INFANT SCHOOL



Hooked on Thinking

Working With and For Local Families

Recent research shows us that: **For children** to develop a deep understanding of mathematical concepts, they need to make sense of various mathematical ideas as well as their applications. Therefore we adopt a learning approach similar to those experienced by students in Singapore, where children are exposed to a variety of learning experiences including hands on activities to help them relate abstract mathematical concepts with concrete experiences. The NCTEM approach and the STEM (2018) research advocate the idea of children not moving on until they are secure in their understanding of a particular concept. The whole class is taught the same thing, at the same time, with children learning at an appropriate level through support and enrichment. Challenge is offered through higher order questioning and activities that develop deeper understanding, problem solving and reasoning skills.

Developing number skills at Hindhayes - Our Calculation Policy has 'concrete, pictorial, abstract' teaching sequences at it's very heart. Children in reception, year 1 and year 2 develop their expertise by doing, visualising and explaining before moving to more abstract forms of calculation. Addition and subtraction are taught together, allowing for connections to be made and key facts to be learnt. We provide the children with blocks of time to develop these skills through a range of models eg bar models, ten frames, part/part/whole and jottings. We extend learning and provide challenge by exposing the children to missing number calculations, word problems and reasoning tasks. Commutativity in addition is discovered and proven in a number of different ways. Facts are learnt as part of a systematic programme called numbersense. Children in key stage 1 have four 15 minute numbersense sessions a week on top of their maths lessons. Please see CLP Calculation policy for agreed calculation methods.

Essential Prior Knowledge	Development of skills **Foundation Stage**	**Year 1**	**Year 2**	**Year 3**
Development Matters **3&4 year olds will be learning to:** solve real world mathematical problems with numbers up to 5. Compare quantities using language: more than fewer than. ***Children are able to use number in their everyday experiences, such as setting plates for a teddy bears picnic. They are able to physically manipulate objects and begin to link numbers with the amount of objects they have. Children are able to sing songs that involve number sequences and start to hold up fingers to represent the number said.***	ELG-Have a deep understanding of numbers to 10 including the composition of each number. 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. ***Children explore number patterns through subitsing, dice and domino patterns and numicon plates. Over time, the children learn develop a strong number sense by investigating amounts using make and break strategies, sequencing number towers and numicon plates to support their ability to visualise numbers and making number stories. The use of the NCETM numberblocks scheme underpins much of this development. Some numbersense materials within 5 also support this understanding.***	- read, write and interpret mathematical statements involving addition (+), subtraction (–) and equals (=) signs - represent and use number bonds and related subtraction facts within 20 - add and subtract one-digit and two-digit numbers to 20, including zero - solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as 7 = ? – 9. ***Children continue to develop their understanding of number by partitioning and recombining parts of wholes. They demonstrate this understanding by sorting objects into groups then recombining them to find the whole. Number stories using the First, then, now sequence allow the children to visualise the steps of addition. Children explore the commutativity of addition by moving parts around and proving that the whole remains the same. Subtraction skills are developed by starting with the whole and then taking one part away. Children use part, part whole models and story scenarios to develop this concept. Links are established between the two operations. Over time and through a wider collection of maths units, such as place value, measure and multiplication and division, children retain and recall facts and apply their skills to new contexts.***	-solve problems with addition and subtraction: using concrete objects and pictorial representations, including those involving numbers, quantities and measures applying their increasing knowledge of mental and written methods recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100 -add and subtract numbers using concrete objects, pictorial representations, and mentally, including: a two-digit number and ones; a two-digit number and tens; two two-digit numbers; adding three one-digit numbers -show that addition of two numbers can be done in any order (commutative) and subtraction of one number from another cannot -recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems. ***The use of part, part whole models, bar models and tens frames continue to provide crucial exposure to the concept of addition and subtraction. Commutativity and inverse realtionships are explored through family of facts and partitioning numbers. The numbersense programme ensures that facts are regularly reviewed and recalled allowing for strong fluency that then supports the links between bonds to 10 to bonds to 100. Again, addition and subtraction skills are revisited and developed through wider units, such as place value, measure and multiplication and division.***	-add and subtract numbers mentally, including: a three-digit number and ones; a three-digit number and tens; a three-digit number and hundreds; add and subtract numbers with up to three digits, using formal written methods of columnar addition and subtraction estimate the answer to a calculation and use inverse operations to check answers solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction. ***Year 3 teachers will use the ready to progress documents and transition information to secure the next steps for addition and subtraction.***

	Key Vocab add, more, and make, sum, total, altogether score double one more, two more, ten more… how many more to make… ? how many more is… than…? take (away), leave how many are left/left over? how many have gone? one less, two less… ten less… how many fewer is… than…? difference between is the same as	Key Vocab *+*, add, more, *plus* make, sum, total, altogether double, *near double* one more, two more… ten more how many more to make…? how many more is… than…? *how much more is…?* *-, subtract*, take (away), *minus* leave how many are left/left over? how many are gone? one less, two less, ten less… how many fewer is… than…? *how much less is…?* difference between *half, halve* *=, equals, sign,* is the same as	Key Vocab +, add, *addition*, more, plus make, sum, total, altogether double, near double one more, two more… ten more… *one hundred more* how many more to make…? how many more is… than…? how much more is…? -, subtract, take away, minus leave, how many are left/left over? one less, two less… ten less… *one hundred less* how many less is… than…? how much fewer is…? difference between half, halve =, equals, sign, is the same as *tens boundary*