



Mathematics Programme of Study

Curriculum Map

	Autumn	Spring	Summer
Nursery	Counting • Subitising opportunities up to 3 • Recite numbers to and then past 5 in the context of songs and rhymes. Number recognition • Show 'finger numbers' up to 5 Addition and Subtraction • Compare quantities using more and less Space • Talk about and identify patterns around them. Shape 2d Shape • Select shapes appropriately for a task • Talk about and explore 2D shape • Use informal language for properties Measures Make comparisons between objects relating to size, length.	Counting • Cardinal principle • 1:1 correspondance: 1,2,3,4,5 Number recognition • Link numerals and amounts. • Experiment with their own symbols and marks as well as numerals. Addition and Subtraction • Compare quantities using more and less Space • Basic prepositions Shape 3d Shape • Select shapes for a task • Talk about and explore 3D shape • Use informal language for properties Measures • Make comparisons between objects relating to size, lweight and capacity	Counting • Recite numbers to and past 10 to 5 • 1:1 correspondance to and past 5 Number recognition • Link numerals and amounts. • Experiment with their own symbols and marks as well as numerals. Addition and Subtraction • Solve real world mathematical problems with numbers up to 5. Space • Describe a familiar route. Use prepositions in this context • Extend, Correct and create ABAB patterns - stick, leaf, stick, leaf. Shape 2 d and 3d Shape • Select shapes for a task • Talk about and explore 2d and 3D shape • Use informal language for properties Measures Make comparisons between objects relating to size, length, weight and capacity

Curriculum Map

	Autumn	Spring	Summer	
Reception	Number Understanding Numbers within 5 <i>Ideas from ncetm weeks 1, 3, 4, 6 (9)</i> • Subitise perceptually up to 5 • Explore the composition of numbers to 5 (Spot small numbers in bigger numbers) Numerical patterns Counting <i>Ideas from ncetm week 2,6,</i> • Count by rote to 20 • Link number names to numerals within 10 <i>ncetm week 12</i> • Identify when a set can be subitised and when counting is needed understanding 1:1 correspondence 9 <i>(some children may need to count 4, ncetm week 4)</i> • Count objects, actions and sounds Developing understanding of shape • Continue, copy and create repeating patterns	Number Revisiting and developing deeper understanding of 5 and move to 6 <i>Ideas from ncetm weeks 5, 11, 14</i> • Understand the 'one more than/one less than' relationship between consecutive numbers notice the stair case pattern of numbers getting bigger, • Subitise perceptually to 5 and conceptually up to 6 Addition and subtraction within 5 then 6 <i>Ideas from ncetm weeks 5, 7 ,8</i> • Explore the composition of numbers to 5 • Parts and wholes • In different contexts, including recognising when one quantity is greater than the other, and that some numbers can be shown as equal parts. • Use conceptual subitising to develop understanding of number facts to 6. including 5and a bit) • Begin to talk about and record as addition Numerical patterns • Count by rote to 20 • Link number names to numerals within 20 • Count objects, actions and sounds • Understanding 1:1 correspondence <i>Odd and even</i> • <i>Begin to explore odd and even in context (equal and not equal parts)</i> Compare numbers • <i>Explore comparisonNCETM week 5,7</i> Developing understanding of shape • Select, rotate and manipulate shapes • Compose and decompose shapes so that children recognise a shape can have other shapes within it, just as numbers can Measures Estimate, order compare, discuss and explore lengths	Number Revisiting and developing deeper understanding of numbers within 10 <i>Use ncetm materials 11, 14, 15</i> • Compare quantities more , fewer equal - Understand that adding is coming to sets and subtraction is taking a smaller set away from a larger one • Recognise, discuss and record number bonds for numbers 0-10. (addition) • Recognise, discuss and record number bonds for numbers 0-10. (subtraction) • Automatically recall number bonds for numbers to 5 and some for 10. (addition) • Automatically recall number bonds to 5 and some for 10. (subtraction) Numerical patterns Counting • Link number names to numerals within 20 • Counting on a number line • Finding on a number line • Ordering on a number line • Count objects, actions and sounds • Understanding 1:1 correspondence Developing understanding of shape • Focus on 2d shapes • Select, rotate and manipulate shapes • Compose and decompose shapes so that children recognise a shape can have other shapes within it, just as numbers can	Number Revisiting and developing deeper understanding of numbers within 10 • Compare quantities equal • Recognise double facts Addition and subtraction within 10 • Talk about and record as addition and subtraction composition of numbers to 10 Numerical patterns Counting • Count by rote to 20 and beyond • Link number names to numerals within 20 Identify and talk about odd and even numbers Identify and talk about doubles Measures • Estimate, order compare, discuss and explore capacity Number Understanding Numbers within 10 Addition and subtraction within 10 • Recognise and recall double facts • Automatically recall number bonds for numbers to 5 and some for 10. (addition) • Automatically recall number bonds to 5 and some for 10. (subtraction) Begin to understand the composition of numbers up to 20 Numerical patterns Doubles Odd and even Counting Count beyond 20 Measures • Estimate, order compare, discuss and explore capacity • Revisit by compare size in different ways Revisiting Developing understanding of shape • Focus on 3d shapes • Select, rotate and manipulate shapes • Continue, copy and create repeating patterns • Compose and decompose shapes so that children recognise a shape can have other shapes within it, just as numbers can.

Year One	Teen numbers - Place value- pictorial representations - Stem sentences- can you see the 10 in me? Addition and Subtraction - Retrieval of + and – apply into number bonds and facts 2D shapes - Decomposing and composing - Sides and vertices - Half and quarter NCETM- Term 1 Retrieval and mastery subitising & composition of numbers	Time - Ordering the day 1st, 2nd, 3rd Counting in 10s - Teens and ty - Place value (100 square) - Numbers to 100 - More than, less than, = - Ordering Addition and Subtraction 2 digit +/- 1 digit within 20 - Pictorial representations NCETM-Term 2 weeks 7, 8 and 9 Retrieval and mastery composition of numbers	Number - Odd and even numbers - Counting in 2s and 5s - Number tracks - Hundred square. Time - Months of the year - O'clock - Half past Number facts - For 20 + and – - Missing boxes NCETM (Term 2) week 10 and 11 Retrieval addition and subtraction structures	Half and quarter - Turns - Of number Money - Coins and ordering 2p 2p 2p = 6p - Problems Measure - Length - Height NCETM (Term 3) Retrieval and mastery – ten and teens numbers	Number - Numbers as words - Place value on a number line Addition and Subtraction - number facts within 20 2 digit +/- 1 digit within 20- up to 40 - On number line 3D shapes - Name and identify - Properties NCETM – additional materials Number bond retrieval slides and stems	Multiplication - Revisit doubling - Repeated addition - Read an array Division - Revisit half and quarter - Grouping - Sharing (linked to $\frac{1}{2}$ and $\frac{1}{4}$) Measure- Mass - Ordering - Reading scales - Accurate measuring Measure- Capacity - Ordering - Reading scales - Accurate measuring
Year Two	Place value - Value of two digit numbers - Partition numbers in different ways. Ordering - count in steps of 2, 3, and 5 from 0, and 10 forward and backward - compare/ order numbers to 100 - use <, > and = signs - estimate numbers on a number line. - use place value and number facts to solve problems. Addition and subtraction - addition/subtraction facts in 10. - Add and subtract 2 two-digit numbers - Pictorial representation NCETM- Term 1 Retrieval and mastery – number bonds to 10 and teens numbers . Linear system	Addition and subtraction - recall and use addition and subtraction facts to 20 - related facts up to 100 including commutativity and inverse. Multiplication and Division - multiplication and division facts for the 2, 5 and 10 - odd and even numbers - multiplication as repeated addition and arrays within 2s, 3s, 5s and 10s. - Understand division as repeated subtraction and grouping. - They use commutativity and inverse relations. 2d shape - Properties - Compare and sort 2D shapes - Symmetry NCETM revisit for mastery - additional material Number bond retrieval slides and stems	Time - o'clock and half past - Quarter past and quarter to 5 minute intervals Handling Data - pictograms , tally charts, block charts - ask and answer simple questions - totalling and comparing Addition and Subtraction – - Adding 3 one-digit - commutativity - Addition and subtraction on blank number lines - bridging 10. including: - Solve word problems NCETM-Term 2	Multiplication and Division - Multiplication recap - Division by sharing Money - ordering coins - make a particular value in different ways. - solve money problems money, giving change. Fractions - Fractions of 2D shape - Fraction of length - Fractions of objects and links to sharing - Fractions of quantity - Equivalence	Addition and subtraction - Finding the difference. Solve word problems including missing number problems. Measures – length , temperature - ordering - Reading scales - Finding the difference. 3d shape - Properties - edges, vertices and faces - identify 2-D shapes on the surface of 3-D shapes - compare and sort 3-D shapes Time - Revisit to the nearest 5 minutes - Word problems NCETM-Term 3 Retrieval and mastery – applying and reasoning	Measures – Mass, capacity - Applying ordering - Reading scales - Difference/ comparing Application of operations - Recap all operations. - Solving word problems for all operations, making links between measures and money - Solve word problems including missing number problems. Position and direction - Link to fractions - read and write numbers to at least 100 in numerals and in words



Our **ACHIEVE** curriculum ensures:



All children are provided with the very best learning experiences that engage, motivate, challenge and inspire.



Children develop their love for learning in stimulating and safe environments throughout the school.



Happiness of all is paramount.



Individual needs are recognised and met; an inclusive curriculum for all.



Early Years expertise is used to meet the unique needs of the children from the ages of 3-7.



Voices of the children are heard and listened to, ensuring that they are at the heart of everything we do and every decision we make.



Each and every child makes the best possible progress, leading to lifelong academic and personal achievement.





EYFS

Four guiding principles should shape practice in early years settings. These are:

A Unique
Child

Positive
Relationships

Enabling
Environments

Learning and
Development

- Every child is a unique child, who is constantly learning and can be resilient, capable, confident and self-assured.
- Children learn to be strong and independent through positive relationships.
- Children learn and develop well in enabling environments with teaching and support from adults, who respond to their individual interests and needs and help them to build their learning over time. Children benefit from a strong partnership between practitioners and parents and/or carers.
- Children develop and learn at different rates.

Developing a strong grounding in number is essential so that all children develop the necessary building blocks to excel mathematically. Children should be able to count confidently, develop a deep understanding of the numbers to 10, the relationships between them and the patterns within those numbers. By providing frequent and varied opportunities to build and apply this understanding – such as using manipulatives, including small pebbles and tens frames for organising counting – children will develop a secure base of knowledge and vocabulary from which mastery of mathematics is built. In addition, it is important that the curriculum includes rich opportunities for children to develop their spatial reasoning skills across all areas of mathematics including shape, space and measures. It is important that children develop positive attitudes and interests in mathematics, look for patterns and relationships, spot connections, 'have a go', talk to adults and peers about what they notice and not be afraid to make mistakes

EYFS Nursery					
	Number – composition of number and using this understanding with number facts	Numerical Patterns – counting, cording, comparing and patterns	Shape	Space	Measure
3-4 Year Olds Children will be learning to	Develop fast recognition of up to 3 objects, without having to count them individually ('subitising'). Say one number for each item in order: 1,2,3,4,5 Know that the last number reached when counting a small set of objects tells you how many there are in total ('cardinal principle'). Show 'finger numbers' up to 5 Solve real world mathematical problems with numbers up to 5.	Recite numbers to and then past 5. Experiment with their own symbols and marks as well as numerals. Link numerals and amounts: for example, showing the right number of objects to match the numeral, up to 5. Compare quantities using language: 'more than', 'fewer than'.	Talk about and explore 2D and 3D shapes (for example, circles, rectangles, triangles and cuboids) using informal and mathematical language: 'sides', 'corners'; 'straight', 'flat', 'round'. Select shapes appropriately: flat surfaces for building, a triangular prism for a roof etc. Combine shapes to make new ones – an arch, a bigger triangle etc. Art from different cultures used as stimuli Use informal language like 'pointy', 'spotty', 'blobs' etc	Understand position through words alone Describe a familiar route. Discuss routes and locations, using words like 'in front of' and 'behind' Talk about and identify the patterns around them. For example: stripes on clothes, (including those from different cultures) designs on rugs and wallpaper. . Extend and create ABAB patterns – stick, leaf, stick, leaf. Notice and correct an error in a repeating pattern.	Make comparisons between objects relating to size, length, weight and capacity. Use objects that are of value and importance for different reasons, food, precious items Begin to describe a sequence of events, real or fictional, using words such as 'first', 'then...
	Children point to small group of two or three objects and say "look there's 2". Children are asked and can answer how many there are in a small set of two or three- Children count things and then are supported to repeat the last number e.g. 1, 2, 3 there are 3 cars'. Children have experience combining and recombining groups and taking objects away	Children regularly join in with the counting sequence in a variety of playful contexts. -Children see small numbers to manage the learning environment e.g. Pots labelled with 3 for pencils. -Children are encouraged to record in their own way and give meaning to these marks. -Children have access to numerals for reference if they choose. -children see adults modelling counting throughout the day. -Children partake in mathematical ideas throughout the day e.g. "I think that ... has more crackers" or "There are 4 of you but not enough chairs" -Children talk about changes in amounts.	- Children play freely with blocks, puzzles, shape sorters. -Children are questioned in relation to shape e.g. 'What is the same?' 'Can you find a different shape? -Children to talk about shapes using language such as curvy and pointy. -Children are encouraged and supported to talk about shapes as they play with them. -Children have access to a range of construction materials in their free-play. Encourage children to talk about their shapes and how their properties suit the purpose. -Children explore shapes that can combine to make other shapes. -Children are given challenges to make their build more complex.	-Children discuss positions in real contexts e.g. Shift the leaves off the path. -Children are support to use spatial words in play such as in, on, under. -Children explore the school grounds and then describe their route and give directions to each other. -Children play with train tracks and water flowing challenges. -Children listen to and discuss stories about journeys e.g. 'Rosie's Walk'. -Children are provided with patters from different cultures. -Children play with a range of natural materials. -Children engage in following and inventing movement and music patterns.	-Children experience size changes e.g. 'Can you make the puddle larger?' -Children talk about and compare size, length, weight and capacity. -Children talk about patterns of events using language such as 'first' 'then' -Children use and understand vocabulary such as 'morning' and 'afternoon'

EYFS Reception					
	Number – composition of number and using this understanding with number facts	Numerical Patterns – counting, ordering, comparing and patterns	Shape	Space	Measure
Reception Year Children will be learning to	Have a deep understanding of numbers to 10:- Subitise perceptually up to 5 then conceptually up to 10 including double facts Explore the composition of numbers to 10. In different contexts, Recognise when one quantity is greater than the other, and that some numbers can be shared equally Partition, combine and recombine groups of objects Children take away a small group of objects from a larger group and know the total has changed. Automatically recall number bonds for numbers 0–5 and some up to 10. (addition) Automatically recall number bonds for numbers 0–5 and some up to 10. (subtraction) Recognise double facts Begin to understand the composition of numbers up to 20	Rote count to ten, beyond ten and then beyond 20 twenty. Count objects, actions and sounds. Children use numerals alongside quantities- linking the number symbol (numeral) with its cardinal number value with numbers to 10 then 20 Explore and represent patterns within numbers up to 10 Understand the 'one more than/one less than' relationship between consecutive numbers. Identify relationships between numbers Identify and talk about odd and even numbers Identify and talk about doubles Compare numbers- using the terms more, less and equal Understanding how quantities can be distributed equally	Select, rotate and manipulate shapes in order to develop spatial reasoning skills. Shapes in nature and in the environment used as source pictures/ practical objects. Compose and decompose shapes so that children recognise a shape can have other shapes within it, just as numbers can.	Continue, copy and create repeating patterns. Stimuli from different countries are used including fabrics, flags and carvings. Eg Ghanaian Kente weaving.	Compare length, weight and capacity. Use containers from different cultures different patterns.
ELG for this area	<i>-Have a deep understanding of number to 10, including the composition of each number;</i> <i>- Subitise (recognise quantities without counting) up to 5;</i> <i>- 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.</i>	<i>- Verbally count beyond 20, recognising the pattern of the counting system;</i> <i>- Compare quantities up to 10 in different contexts, recognising when one quantity is greater than, less than or the same as the other quantity;</i> <i>- Explore and represent patterns within numbers up to 10, including evens and odds, double facts and how quantities can be distributed equally.</i>			
	-Children are encouraged to subitise first before counting to check. -Children see small quantities in familiar patterns e.g. On a dice. -Children play games that involve quickly revealing and hiding numbers of objects. -Children use a range of resources to explore the composition of 5 and then 10. - putting numbers into equal groups -Children share out quantities fairly. -Children estimate how many there might be before counting- adults to model this e.g. I think there might be 8, shall we count to see. -Children count out a smaller number from a set. -Children play games that involve quickly revealing and hiding numbers of objects. - -Children have conceptual combining modelled to them e.g. 'if there are 3 here and 3 here, there must be six;. -children play games that involve portioning and recombining sets. -children see and use practical displays that show different ways of making 10.	. -Children discuss different ways of recording quantities such as tallies, circles, dots, numerals. -Children see numbers in the environment to become familiar with 1 digit then 2 digit numbers. -Children count as part of everyday routines. -Children listen to stories that involve counting. -Children use the vocabulary 'more' 'less' and 'fewer' -Children develop the skills of counting objects including saying then numbers in order and matching one number name to each item. Children say how many there are after counting e.g. ...6, 7 ,8. There are 8 balls'. - Children put objects in 5 frames and then 10 frames. -Children compare different collections of objects- including of different physical sizes eg footballs and ping pong balls to draw attention to the number not size. -Children use the vocabulary 'more' 'less' and 'fewer' -Children join in with and sing counting songs and rhymes. - Children count verbally beyond 10. -Children play games that involve counting hide and seek, board games Ludo game (which originated in India) Pada (an African form of .hopscotch)	-Children explore and play with building sets such as tangrams and magnetic construction tiles. -Children are challenged to copy complex 2D pictures and patterns with 3D resources. -Children solve a range of jigsaws. -Children investigate how shapes can be combined to make new shapes. -Children find 2D shapes within 3D shapes.	-children explore and make different patterns with shapes and numbers including seeing the visual pattern of odd and even quantities -Children are challenged to copy complex 2D pictures and patterns with 3D resources. Art from different cultures used as stimuli.	-Children start to use comparative language such as 'this is heavier than that'. -children are asked to make and test predictions e.g. 'what is poured into the jugful into the teapot? Which holds more?' Talk about different liquids from different cultures. Water being a healthy drink and a precious resource.

Vocabulary for the Early Year Foundation Stage					
	Number recognition Number - composition of number and using this understanding with number facts	Numerical Patterns - counting, ordering, comparing and patterns	Shape	Space	Measure
	Guess how many ...? Estimate nearly close to about the same as just over, just under too many, too few enough, not enough Add, more, and make, sum, total altogether double one more, two more how many more to make ...? How many more is ... than ...? How much more is ...? Take away how many are left/left over? How many have gone? One less, two less, ten less ... how many fewer is ... than ...? How much less is ...? Difference between Sharing doubling halving	Ones tens the same number as, as many as more, larger, bigger, greater fewer, smaller, less fewest, smallest, least most, biggest, largest, greatest one more, ten more one less, ten less compare order size first, second, third, last, before, after next between Zero number one, two, three ... to twenty and beyond teens numbers, eleven, twelve ... twenty How many ...? Count, count (up) to, count on (from, to), count back (from, to) count in ones, is the same as more, less odd, even few pattern pair	Shape, pattern flat curved, straight round, solid, sort make, build, draw size, bigger, larger, pattern, repeating pattern match 2-D shape corner, side rectangle (including square) circle triangle 3-D shape face, edge, cube pyramid sphere cone	Position over, under above, below top, bottom, side on, in outside, inside around in front, behind front, back beside, next to, between middle, , down forwards, backwards, turn,	Measure size compare guess, estimate enough, not enough too much, too little too many, too few nearly, close to, about the same as just over, just under Length Metre length, height, width, depth long, short, tall high, low wide, narrow thick, thin longer, shorter, taller, higher ... and so on longest, shortest, tallest, highest ... Weight Weigh, weighs, balances heavy, light heavier than, lighter than heaviest, lightest scales Capacity and volume Full empty half full holds container

Key Stage 1

The national curriculum for mathematics aims to ensure that all pupils:

- ♣ become **fluent** in the fundamentals of mathematics, including through varied and frequent practice with increasingly complex problems over time, so that pupils develop conceptual understanding and the ability to recall and apply knowledge rapidly and accurately.
 - ♣ **reason mathematically** by following a line of enquiry, conjecturing relationships and generalisations, and developing an argument, justification or proof **using mathematical language**
 - ♣ can **solve problems** by applying their mathematics to a variety of routine and nonroutine problems with increasing sophistication, including breaking down problems into a series of simpler steps and persevering in seeking solutions.
- Mathematics is an interconnected subject in which pupils need to be able to move fluently between representations of mathematical ideas

Maths Progression- Key Stage One												
Year One Overview	Numbers as labels and for counting Developing and deepening understanding of place value Children should be continuing to work on number formation and size. Ordering numbers and place value confidently within 100				Calculating Children learn about use number lines and other models such as arrays to support and explain their methods and reasoning. As mental recall is strengthened and extended, so too are children's written methods, primarily using number lines. They increasingly use and learn the meaning of the associated signs and symbols. Year One whilst covering the breadth of the national curriculum expectations should have a greater emphasis on addition and subtraction Every unit should include an element of reasoning and problem solving				Shape, Space and Measure All measure stements need to be learnt for Length/height, Weight/mass, Capacity/volume Money Time			
Year 1 ready-to-progress criteria - Mathematics guidance: key stages 1 and 2 Non-statutory guidance for the national curriculum in England June 2020 These objectives are identified in bold in the objectives tables												
Count within 100, forwards and backwards, starting with any number.												
Reason about the location of numbers to 20 within the linear number system, including comparing using < > and =												
Develop fluency in addition and subtraction facts within 10.												
Count forwards and backwards in multiples of 2, 5 and 10, up to 10 multiples, beginning with any multiple, and count forwards and backwards through the odd numbers.												
Compose numbers to 10 from 2 parts, and partition numbers to 10 into parts, including recognising odd and even numbers.												
Read, write and interpret equations containing addition (+), subtraction (−) and equals (=) symbols, and relate additive expressions and equations to real-life contexts.												
Recognise common 2D and 3D shapes presented in different orientations, and know that rectangles, triangles, cuboids and pyramids are not always similar to one another.												
Compose 2D and 3D shapes from smaller shapes to match an example, including manipulating shapes to place them in particular orientations.												
Number recognition	Counting	Ordering	Place Value	Addition	Subtraction	Multiplication &Division	Fractions	Shape	Space	Measure	Money	Time
Read and write numbers from 1 to 20 in numerals and words Count, read and write numbers to 100 in numerals	Count to and across 100, forwards and backwards, beginning with 0 or 1, or from any given number Count forwards and backwards in multiples of 2, 5 and 10, up to 10 multiples, beginning with any multiple, and count forwards and backwards through the odd numbers	Given a number, identify one more and one less Identify and represent numbers using objects and pictorial representations including the number line, Use language of: equal to, more than, less than (fewer), most, least Pupils practise counting (1, 2, 3...), ordering (for example, first, second, third...), and to indicate a quantity (for example, 3 apples, 2 centimetres), including solving simple concrete problems Reason about the location of numbers to 20 within the linear number system, including comparing using < > and =	Pupils begin to recognise place value in numbers beyond 20 by reading, writing, counting and comparing numbers up to 100, supported by objects and pictorial representations and the 100 square Partition numbers up to 50, then 100 into 10s and 1s	Read, write and interpret mathematical statements involving addition (+),and equals (=) signs Compose numbers to 10 from 2 parts, including recognising odd and even numbers Develop fluency in addition and subtraction facts within 10. Pupils memorise and reason with number bonds for 10 and 20 in several forms (for example, 9 + 7 = 16; 16 - 7 = 9; 7 = 16 - 9). Represent and use number bonds facts within 20 Add one-digit and two-digit numbers to 20, <i>i.e. Totals to 40</i> (1) Firstly written recording *pictorial representations, *numberlines (using counting on in ones.) (2) secondly mentally Solve missing number problems such as 7 = □ - 9. They should realise the effect of adding zero.	Read, write and interpret mathematical statements involingsubtraction (-) and equals (=) signs Partition numbers to 10 into parts, including recognising odd and even numbers Develop fluency in addition and subtraction facts within 10. Pupils memorise and reason with number bonds to 10 and 20 in several forms (for example, 9 + 7 = 16; 16 - 7 = 9; 7 = 16 - 9). Represent and use subtraction facts within 20 Subtract one-digit and two-digit numbers to 20, <i>i.e within 40</i> (1) Firstly written recording *pictorial representations, *numberlines (using counting on in ones.) (2) secondly mentally Solve missing number problems such as 7 = □ - 9. They should realise the effect of subtracting zero.	Count in multiples of twos, fives and tens making connections with repeated addition and arrays Use money within repeated addition problems - coins of the same value Through grouping and sharing small quantities understand division Solve one-step problems involving multiplication and division, by calculating the answer using concrete objects, pictorial representations and arrays with the support of the teacher.	Recognise, find and name a half as one of two equal parts of an object, shape or quantity Recognise, find and name a quarter as one of four equal parts of an object, shape or quantity	Recognise and name common 2-D shapes (e.g. Square, circle, triangle) and from different cultures is used to find shapes They recognise shapes inside of shapes, e.g. How many rectangles can you find inside this square? They recognise these shapes in different orientations and sizes, and know that rectangles, AND triangles, are not always similar to each other. Recognise and name common 3-D shapes (e.g. Cubes, cuboids, pyramids & spheres) They recognise these shapes in different orientations and sizes, and know that cuboids and pyramids are not always similar to each other. Use purple mash to sort and organise shape	Describe position, direction and movement, including whole, half, quarter and three-quarter turns	Compare, describe and solve practical problems for: ♣ lengths and heights [<i>for example, long/short, longer/shorter, tall/short, double/half</i>] ♣ mass/weight [<i>for example, heavy/light, heavier than, lighter than</i>] ♣ capacity and volume [<i>for example, full/empty, more than, less than, half, half full, quarter</i>]] They measure and begin to record the following: ♣ lengths and heights ♣ mass/weight ♣ capacity and volume Pupils begin to use measuring tools such as a ruler, weighing scales and containers. •measure and begin to record measures including time Using - (1)non-standard units, including discrete (for example, counting) and continuous (for example, liquid) measurement, (2) using manageable common standard units.	Solve practical problems for: Measures including time Recognise and know the value of different denominations of coins and notes	Sequence events in chronological order using language •recognise and use language relating to dates, including days of the week, Weeks, Months and years •tell the time to the hour and half past the hour and draw the hands on a clock face to show these times

Year One Vocabulary								
	Number	Addition	Subtraction	Multiplication and Division	Fractions	Shape	Space	Measure, Time and Money
	Number numeral zero one, two, three ... twenty teens numbers, eleven, twelve ... twenty twenty-one, twenty-two ... one hundred none how many ...? Count, count (up) to, count on (from, to), count back (from, to) forwards backwards count in ones, twos, fives, tens equal to equivalent to is the same as more, less most, least many odd, even multiple of few pattern Ones tens digit the same number as, as many as more, larger, bigger, greater fewer, smaller, less fewest, smallest, least most, biggest, largest, greatest one more, ten more one less, ten less equal to one more, ten more one less, ten less compare order size first, second, third... twentieth last, last but one before, after next between half-way between above, below	Add, more, and make, sum, total altogether double near double half, halve one more, two more ... ten more how many more to make ...? How many more is ... than ...? How much more is ...? Put together ,total	Take away how many are left/left over? How many have gone? One less, two less, ten less ... how many fewer is ... than ...? How much less is ...? Difference between equals is the same as number bonds/pairs missing number distance between,total	Multiplication multiply multiplied by multiple division dividing grouping sharing doubling halving array number patterns	Fraction equal part equal grouping equal sharing parts of a whole half one of two equal parts quarter one of four equal parts	2-D shape corner, side point, pointed rectangle (including square) circle triangle 3-D shape face, edge, vertex, vertices cube, cuboid pyramid sphere cone cylinder	Position over, under, underneath above, below top, bottom, side on, in outside, inside around in front, behind front, back beside, next to opposite apart between middle, edge centre corner direction journey left, right up, down forwards, backwards, sideways across next to, close, near, far along through to, from, towards, away from movement slide roll turn stretch, bend whole turn, half turn, quarter turn, three-quarter turn	Measure measurement size compare guess, estimate enough, not enough too much, too little too many, too few nearly, close to, about the same as roughly just over, just under Length centimetre, metre length, height, width, depth long, short, tall high, low wide, narrow thick, thin longer, shorter, taller, higher ... and so on longest, shortest, tallest, highest ... and so on far, near, close ruler metre stick Weight kilogram, half kilogram weigh, weighs, balances heavy, light heavier than, lighter than heaviest, lig Capacity and volume litre, half litre capacity volume full empty more than less than half full quarter full holds container Time time days of the week, Monday, Tuesday ... months of the year (January, February ...) Seasons: spring, summer, autumn, winter day, week, weekend, month, year birthday, holiday morning, afternoon, evening, night bedtime, dinner time, playtime today, yesterday, tomorrow before, after earlier, later next, first, last midnight date now, soon, early, late quick, quicker, quickest, quickly slow, slower, slowest, slowly old, older, oldest new, newer, newest takes longer, takes less time how long ago? How long will it be to ...? How long will it take to ...? How often? Always, never, often, sometimes usually once, twice hour, o'clock, half past, quarter past, quarter to clock, clock face, watch, hands hour hand, minute hand hours, minutes Money money coin penny, pence, pound price, cost buy, sell spend, spent pay change dear, costs more cheap, costs less, cheaper costs the same as how much ...? How many ...? Total

Maths Progression- Key Stage One

Year Two Overview	Numbers as labels and for counting Calculating Children secure using self drawn blank number lines to solve and record any subtraction or addition within 100. Children able to draw sections of 100 square to solve addition and subtraction problems. Children able to self select either the visual representation of numicon or blank number lines or hundred squares to solve a mixed set of addition and subtraction problems including those which cross the tens boundary Arrays are the primary form of recording for multiplication and division that <u>cannot be solved mentally</u> Every unit should include an element of reasoning and problem solving	Shape, Space and Measure Measures work should focus on reasoning and applying mathetics from across the mathematics curriculum eg realting scales to ordering and reasoning about ordering
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Year 2 ready-to-progress criteria - Mathematics guidance: key stages 1 and 2 Non-statutory guidance for the national curriculum in England June 2020 These objectives are identified in bold in the objectives tables

Recognise the place value of each digit in two-digit numbers, and compose and decompose two digit numbers using standard and nonstandard partitioning.

Reason about the location of any two digit number in the linear number system, including identifying the previous and next multiple of 10.

Secure fluency in addition and subtraction facts within 10, through continued practice.

Add and subtract across 10's

Recognise the subtraction structure of 'difference' and answer questions of the form, "How many more...?".

Add and subtract within 100 by applying related one digit addition and subtraction facts: add and subtract only ones or only tens to/from a two-digit number.

Recognise repeated addition contexts, representing them with multiplication equations and calculating the product, within the 2, 5 and 10 multiplication tables.

Relate grouping problems where the number of groups is unknown to multiplication equations with a missing factor, and to division equations (quotitive division).

Use precise language to describe the properties of 2D and 3D shapes, and compare shapes by reasoning about similarities and differences in properties.

Number recognition Counting Ordering Place Value	Addition	Subtraction	Multiplication & Division	Fractions	Shape	Space	Measure	Time	Money	Data and statistics
Read and write numbers to at least 100 in numerals and in words Compare and order numbers from 0 up to 100; use <, > and = signs Reason about the location of any two digit number in the linear number system including identifying the previous and next multiple of 10 use this to add and subtract 10 Count in steps of 2, 3, and 5 from 0, and in tens from any number, forward and backward Identify, represent and estimate numbers using different representations, including pictorial representations the number line and hundred square Recognise the place value of each digit in a two-digit number Use place value to solve problems Partition numbers in different ways	Secure fluency in addition and subtraction facts within 10, through continued practice add within 100 by applying related one digit addition and subtraction facts: Recall and use addition facts to 20 fluently, and derive and use related facts up to 100 Use place value and number facts to solve problems Add numbers using concrete objects, pictorial representations, the number line and mentally, including: Add only ones or only tens to a two-digit number. 2 two-digit numbers - Adding 3 one-digit numbers Begin to use standard written method Add across 10's Show that addition of two numbers can be done in any order (commutative) Recognise and use the inverse relationship between addition and subtraction And use this to check calculations and solve missing number problems	Secure fluency in addition and subtraction facts within 10, through continued practice Subtract within 100 by applying related one digit addition and subtraction facts: Recall and use subtraction facts to 20 fluently, and derive and use related facts up to 100 Recognise the subtraction structure of 'difference' and answer questions of the form, "How many more...?". Use place value and number facts to solve problems Subtract numbers using concrete objects, pictorial representations, the number line and the 100 square and mentally, including: Subtract only ones or only tens from a two-digit number 2 two-digit numbers Begin to use standard written method Subtract across 10's Show that subtraction of two numbers cannot be done in any order Recognise and use the inverse relationship between addition and subtraction And use this to check calculations and solve missing number problems	Recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers Calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication (x), division (÷) and equals (=) sign Show that multiplication of 2 numbers can be done in any order (commutative) and division of 1 number by another cannot Solve problems including problems in contexts involving multiplication and division, using - materials, - arrays, - repeated addition, - mental methods, - and multiplication and division facts, Relate grouping problems where the number of groups is unknown to multiplication equations with a missing factor, and to division equations (quotitive division).	Recognise, find, name and write fractions 1/3, 1/4, 2/4 and 3/4 of a set of length, objects shape or quantity Write simple fractions for example, 1/2 of 6 = 3 and recognise the equivalence of 2/4 and 1/2. Use fractions to talk about sharing fairly in a local or a global context	Use the vocabulary vertices, edges, faces, symmetry Use precise language to identify and describe the properties of 2-D shapes, including the number of sides and line symmetry in a vertical line. Use precise language identify and describe the properties of 3-D shapes, including the number of edges, vertices and faces Identify 2-D shapes on the surface of 3-D shapes. Compare and sort common 2-D and 3-D shapes and everyday objects Compare and sort common 2-D and 3-D shapes and everyday objects by reasoning about similarities and differences in properties.	Order and arrange combinations of mathematical objects in patterns and sequences. ·use mathematical vocabulary to describe position, direction and movement, including movement in a straight line and distinguishing between rotation as a turn and in terms of right angles for quarter, half and $\frac{3}{4}$ turns	Choose and use appropriate standard units to estimate and measure They use the appropriate language and record using standard abbreviations. Length/height (m/cm); mass (kg/g); temperature (°C); capacity (litres/ml) to the nearest appropriate unit, Compare and order - Lengths, - Mass, - Volume/capacity Includes simple multiples such as 'half as high'; 'twice as wide'.And record the results using >, < and= Use rulers, scales, thermometers and measuring vessels. Read the numerical scales on measuring instruments including where not all numbers on the scale are given and estimate points in between	Read, tell, write draw and the hands on a clock face to show time to fifteen minute makers, including the language quarter past/to the hour Read the time on the clock to five minute u=intervals know the number of minutes in an hour and the number of hours in a day Compare and sequence intervals of time	They become fluent in counting and recognising coins Recognise and read and use the symbols £ and p accurately, Read and say amounts of money confidently Find different combinations of coins that equal the same amounts of money Solve simple problems in a practical context involving addition and subtraction of money of the same unit, including giving change	interpret and construct simple pictograms, tally charts, block diagrams and simple tables ·ask and answer simple questions by counting the number of objects in each category and sorting the categories by quantity ·ask and answer questions about totalling and comparing categorical data Pupils record, interpret, collate, organise and compare information (for example, using many-to-one correspondence in pictograms with simple ratios 2, 5,10).
Solve a set of problems which include reasoning about numbers a mix of calculations. Problems involving money may include choices and questions about having enough money. problems that involve more than one step – for example: 'Which has the most biscuits, 4 packets of biscuits with 5 in each packet or 3 packets of biscuits with 10 in each packet?'										

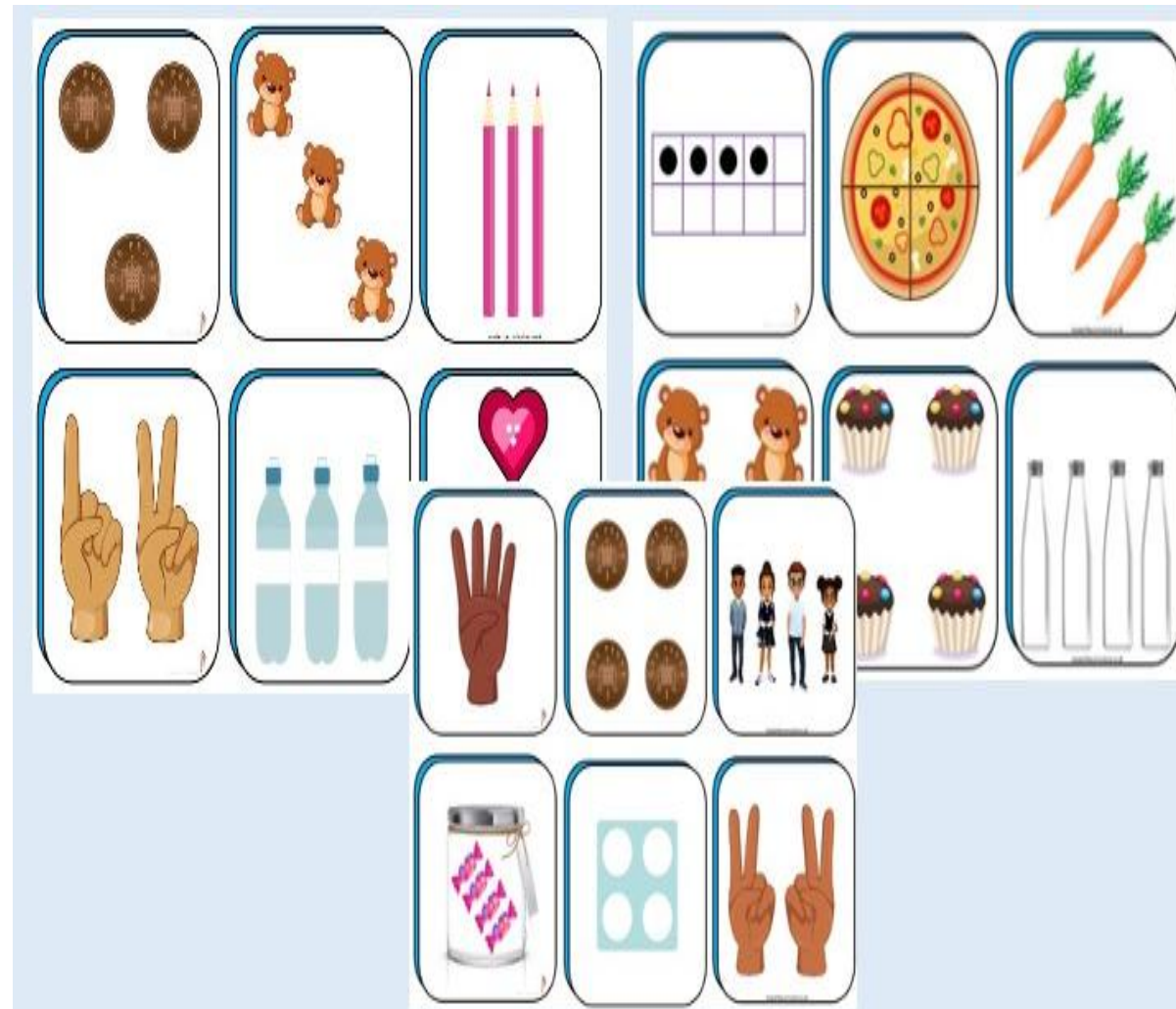
	Number	Addition	Subtraction	Multiplication and Division	Fractions	Shape	Space	Measure	Data
Vocabulary As year one plus	Tally, sequence continue predict rule > greater than < less than, one-, two- or three-digit number place, place value stands for, represents exchange, hundreds , exact, exactly	One hundred more	One hundred less	Groups of times once, twice, three times ... ten times repeated addition Divide, divided by, divided into , share, share equally left, left over one each, two each, three each ... ten each group in pairs, threes ... tens equal groups of row, column multiplication table multiplication fact, division fact	Equivalent fraction mixed number numerator, denominator Two halves quarter, two quarters, three quarters one third, two thirds one of three equal parts	Surface Line Symmetry rectangular, circular, triangular pentagon hexagon octagon	Route higher, lower Clockwise, anticlockwise Right angle straight line	Measuring scale Temperature degree Contains Further, furthest, tape measure millilitre 5, 10, 15 ... minutes past / to digital/analogue clock/watch, timer, seconds Bought sold	count, tally, sort, vote graph, block graph, pictogram represent group, set list, table label, title most popular, most common least popular, least common

SMSC in Mathematics

We promote <i>spiritual</i> Development	We promote <i>moral</i> Development	We promote <i>social</i> Development	We promote <i>cultural</i> Development
By considering pattern, order, symmetry and scale both man made and in the natural world. Mathematics supports spiritual development by engaging children with depth of thinking and problem solving.	By engaging children playfully; for example, in unequal shares of resources, why might someone be upset if they received less than other people? By reflecting on data that has moral and ethical implications; for example children might consider the difference in amounts of money spent on non-essentials compared with food or charity payment.	By the sharing of resources within the classroom, the negotiating of responses and group problem solving. Children are always encouraged to explain concepts to each other and support each other in their learning. In this manner, students realise their own strengths and feel a sense of achievement which often boosts confidence. Over time they become more independent and resilient learners. In maths we provide the foundation skills, knowledge and understanding for future financial development. We talk about things having a cost (value) and having to choose which to buy, identify if we have enough money etc. By making connections between children's numeracy skills and real life; for example, bar charts could compare how a child in a different country spends her day with how children in the UK spend their time.	By asking questions about the history of maths and the language of maths that has Greek or Latin roots. Distance and time and mass, density and volume problems make strong links with Science and help children understand mathematics as the language of Science. By using resources drawn from different cultures such as fabric patterns, games and art to stimulate mathematics children are educated about the societies, locally, nationally and globally in which they live. A range of books can be used for counting that are set in or draw upon different culture eg Emeka's Gift, My granny went to market, Anno's counting book, feast for 10,

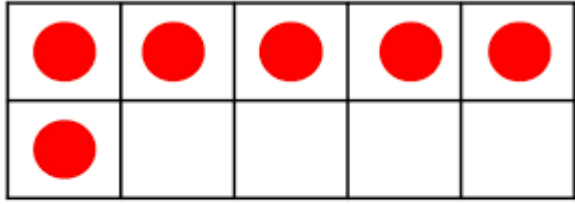
Key Models and Images used to Teach the Programme of Study for Number

Subitising Quantities
A range of images

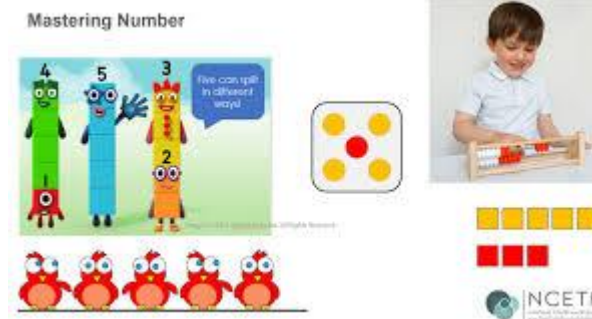
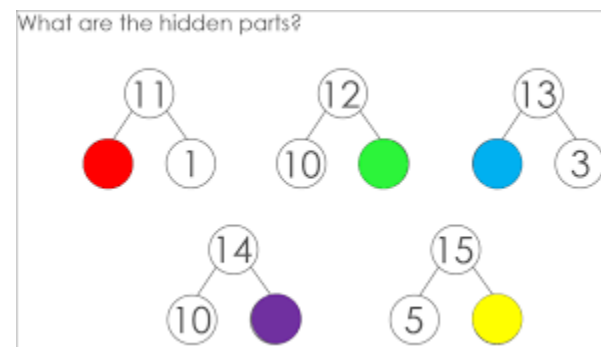
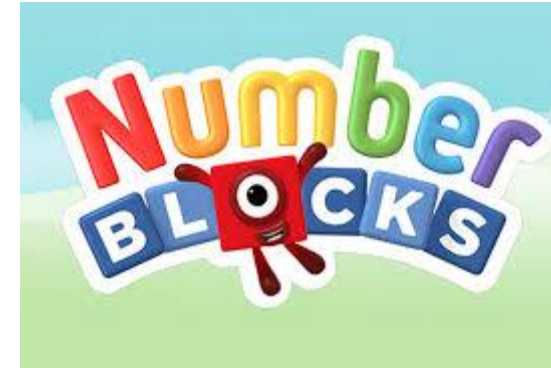


Key Number Understanding images used in the NCETM Mastering number material and used in our curriculum where appropriate

10s frame



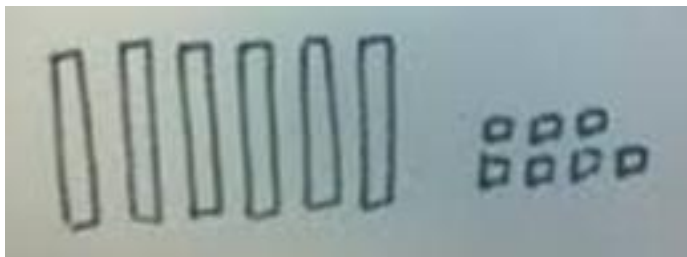
_____ is made of 5 and _____; 5 and _____ make _____.



Numicon

..and the children representing it through age appropriate drawings

is used to help children visualise numbers, see patterns and understand place value , ordering and calculations



Writing Numbers/ Digits

In school we would only use the term number rather than numeral with our children



A symbol or name that stands for a number.

Examples: 3, 49 and twelve are all numerals

Around and round and round we go,
When we get home we have a zero.

the way to make a one

Around and back on a railway track,
Two, two, two



Around the tree and around the tree,
That's the way we make a three.

Down and along, down once more,
That's the way we make a four.

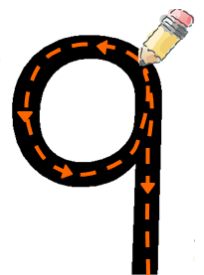
Down and around then a flag on high,
That's the way to make a five.

Down we go and make a loop,
Number six makes a hoop.

That's Across the sky and down to Devon,
That's the way we make a seven.

Make an 's' and do not wait!
When it's joined you have an eight.

Make a circle and then a line,
That's the way to make a nine



Ordering

Without an understanding of ordering children will not know if their answer is correct - we expect children to know that adding two numbers will give a bigger number; we teach them to put the biggest number first; understanding order is the tool they need to be able to do this.

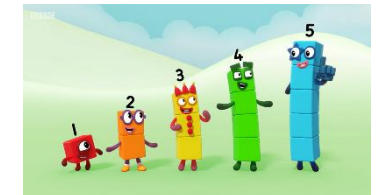
The earliest work on ordering is counting by rote.

0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
---	---	---	---	---	---	---	---	---	---	----	----	----	----	----	----	----	----	----	----	----

The vocabulary for ordering is

Greater, more, larger, bigger, less, fewer, smaller, compare, order, size, estimate, first, second, third etc, number, amount
Last, before, after, next, between, above or below (on a hundred square)

The key images for ordering are number tracks and lines, then a hundred square.



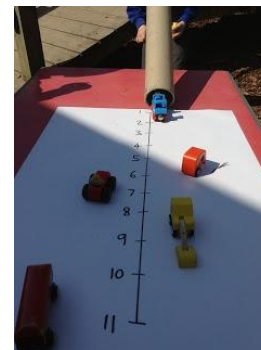
Numicon supports ordering as its structure clearly shows the one more when counting up a long a number line and one less when counting back.



2	3	4	5	6	7	8	9	10	11	12
---	---	---	---	---	---	---	---	----	----	----



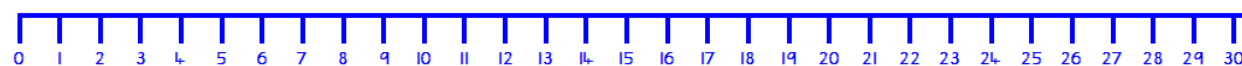
100 Square									
1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100



Look at the number line. Write an **estimate** in the star.



Number Line 0-20																				
0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20

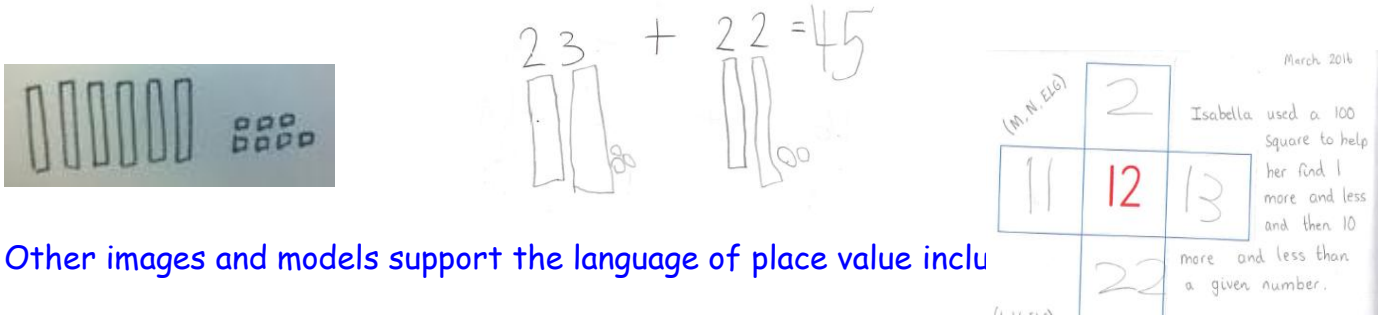


Place Value

Without an understanding of place value children will not be able to talk about or record answers that are bigger than 10. In its simplest terms place value is taught as the fact that the position of the **digit** is what tells us what it is worth. The earliest work on place value is counting by rote beyond 10, and then counting by rote in steps of 10.

An understanding of place value allows children to derive facts e.g. $2+3= 5$ $12+3= 15$ or $20+30=50$
Without understanding of place value children cannot progress to expanded or compact vertical calculations.

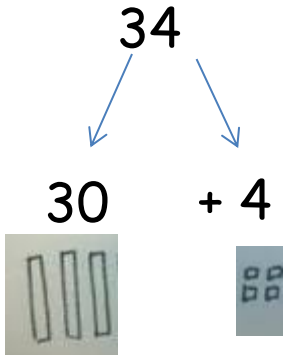
The key image for place value is Numicon; for children to readily use this to record and carry out calculations it should be recorded as dots and rectangles rather than images of the pieces .



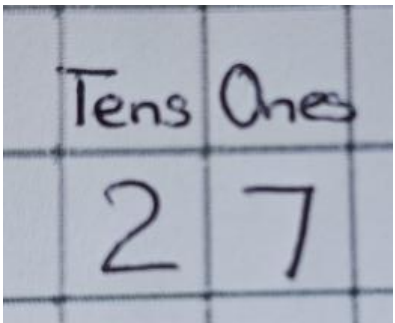
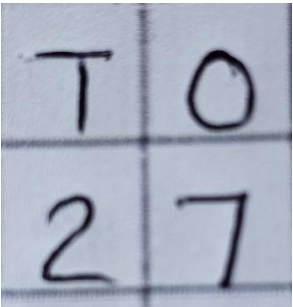
Other images and models support the language of place value inclu

The vocabulary for place value is

Ones, tens, hundreds, exchange, teen number, 'ty', equal to
The same as, as many as, greater, more, larger, bigger, less, fewer, smaller, compare, order, size, first, second , third etc, number, amount, value, stands for, represents, exchange Last, before, after, between, above or below(on a hundred square)



1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100



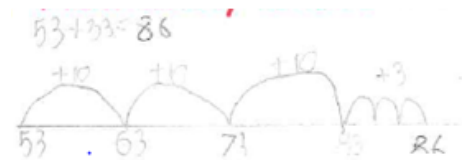
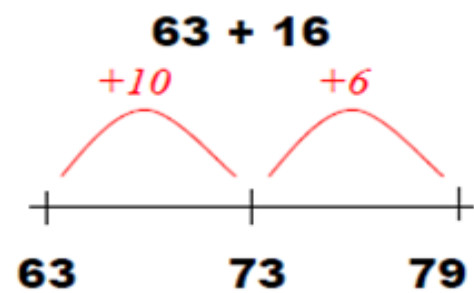
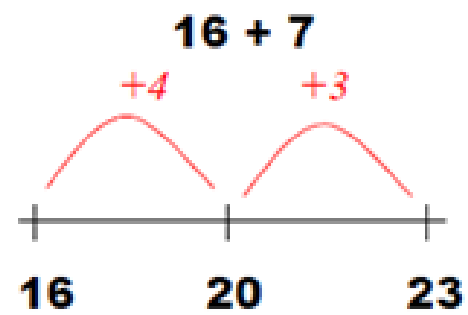
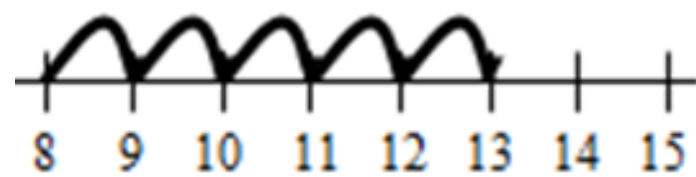
Addition



$$9 + 5 =$$



$$21 + 13 = 34$$



$$15 + 22 = 37$$

15		
25		
35	36	37

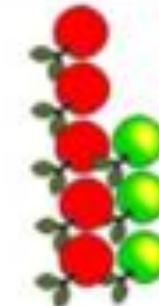
Tens	Ones
2	7
1	2
3	9

Subtraction

Subtraction is takeaway AND difference between

take away

difference between



$$34 - 5 =$$

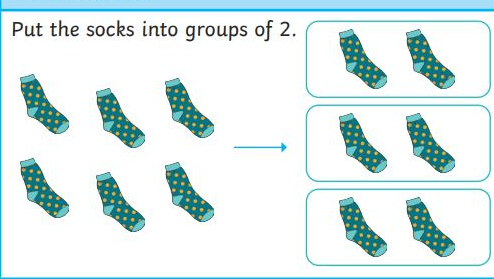
$$86 - 79 =$$

Count back or count on?

Multiplication and Division

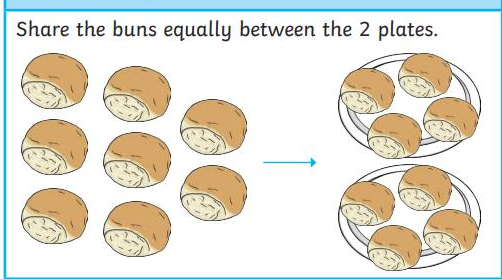
Group Equally

Put the socks into groups of 2.

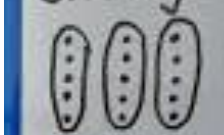
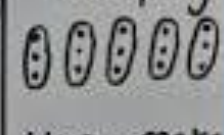


Share Equally

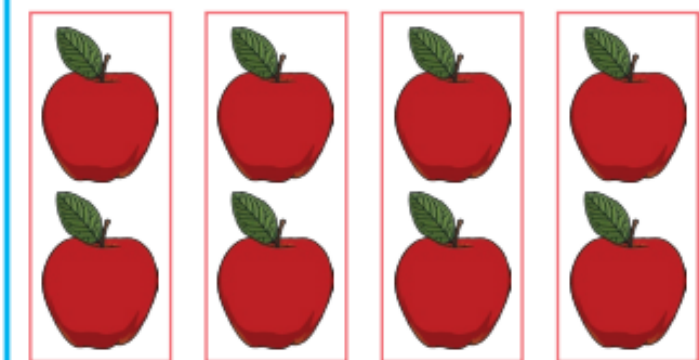
Share the buns equally between the 2 plates.



$15 \div 3 = 5$

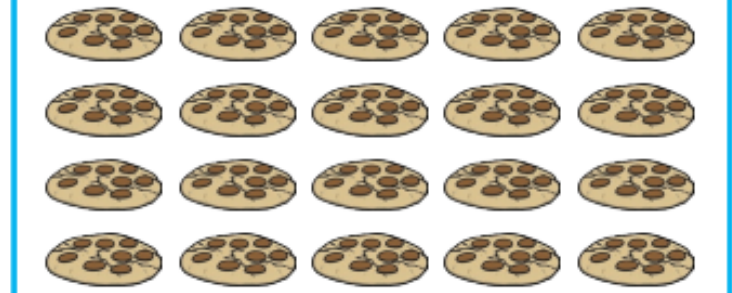
Sharing	Grouping
	
Each person gets 5.	We can make 5 groups of 3.

Add Equal Groups

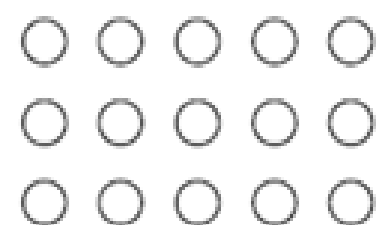


$2 + 2 + 2 + 2 = 8$ apples

Make Arrays



4 rows of 5 = 20 cookies
5 columns of 4 = 20 cookies



$5 \times 3 = 15$
 $3 \times 5 = 15$