Mathematics Progression in Knowledge and Skills

Curriculum Intent

Mathematics is essential to everyday life. We have designed our curriculum to give children a sense of enjoyment and curiosity about mathematics as well as an understanding of how it fits into the world. We link the mathematics curriculum with other subjects such as science to provide children with real life experiences so that they can apply what they know and can do with increasing fluency and independence.

When planning our curriculum, we wanted children to have opportunities to gain a strong grounding in number which is essential so they can develop the necessary building blocks to excel mathematically. Our aim is to ensure children can count confidently and develop a deep understanding of numbers, so they are able to 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. Spatial reasoning skills in shape, space and measure are essential also so children gain an understanding of the location and dimension of objects and how objects are related.

Our curriculum has a strong emphasis on spoken language because we believe that the quality and variety of language that children hear and speak are key factors in developing their mathematical vocabulary. Mathematical reasoning is the bridge between fluency and problem solving so children need the language to present a mathematical justification, argument, or proof. We are eager that children learn how to reason and make sense of mathematics so that they are able to use it in meaningful ways.

Curriculum Implementation

- Through professional development, working closely with a mathematics consultant, all staff gain the necessary subject knowledge to teach mathematics to a high standard.
- We will develop children's understanding of mathematical concepts through high quality teaching and carefully thought-out sequences of lessons which build on prior learning.
- We will ensure children understand mathematics by exploring concepts using concrete equipment before moving onto pictorial and then abstract representations.
- We will teach children appropriate mathematical skills to enable them to become fluent mathematicians and to be able to apply their skills and knowledge to solve problems and reason and explain mathematically.
- We will ignite children's enthusiasm and curiosity enabling them to think as a mathematician and understand it's place in the world we live in.

Substantive and Disciplinary Knowledge in Mathematics

Children need substantive knowledge in mathematics (e.g. number facts, times tables) and disciplinary knowledge (how to work things about, reason and problem solve). They will be taught to make links across different mathematical components to build this knowledge in their long term memory.

The mathematics curriculum focuses on three key teaching principles:

- Fluency and Facts (Substantive knowledge)
- Problem Solving (Disciplinary knowledge)
- Reasoning and Justification (Disciplinary knowledge)

National Curriculum Outcomes	End of Early Years Foundation Stage	End of Key Stage 1
	ELG Numbers: Have a deep understanding of numbers 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. **ELG Numerical patterns:** 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.	**Year 2 Milestone (Bold- Interim Framework)** Pupils count in steps of 2, 3, 5 and 10 forwards and backwards. They understand the place value of digits in 2 digit numbers and can order and compare numbers up to 100, reading and writing numbers up to 100 in numbers and words. **They can partition two-digit numbers into different combinations of tens and ones. This may include using apparatus** (e.g. 23 is the same as 2 tens and 3 ones which is the same as 1 ten and 13 ones). They solve problems with addition, and subtraction using their recall of number facts to 20 and their place value knowledge to problem solve. **They can recognise the inverse relationships between addition and subtraction and use this to check calculations and work out missing number problems (e.g. Δ – 14 = 28).** **They can add 2 two-digit numbers within 100 (e.g. 48 + 35) and can demonstrate their method using concrete apparatus or pictorial representations.** **They can subtract mentally a two-digit number from another two-digit number when there is no regrouping required (e.g. 74 – 33).** **They can use estimation to check that their answers to a calculation are reasonable (e.g. knowing that 48 + 35 will be less than 100).** Pupils solve multiplication and division problems. **They can recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables to solve simple problems, demonstrating an understanding of commutativity as necessary** (e.g. knowing they can make 7 groups of 5 from 35 blocks and writing 35 ÷ 5 = 7; sharing 40 cherries between 10 people and writing 40 ÷ 10 = 4; stating the total value of six 5p coins). **Pupils can write simple fractions, name, and find the fractions ½, ¼, 2/4, 1/3, and ¾ and know that all parts must be equal parts of the whole.** Pupils estimate, measure and compare using standard measures for length/height/temperature/capacity. They solve problems involving money, making totals with different coin combinations, using and understanding the standard symbols for pounds and pence. They tell and make times on a clock face to 5 minute intervals and compare times, knowing the relationship between minutes, an hour and a day

Substantive Knowledge	Key concept	Nursery		Reception	Y1	Y2
		Birth-3	3–4-year-olds	5-year-olds	6-year-olds	7-year-olds
NUMBER	**ADDITION AND SUBTRACTION**	▪ Reacts to changes of amount when those amounts are significant (more than double) ▪ Looks for things which have moved out of sight ▪ React to changes of amount in a group of up to three items.	▪ Separates a group of three or four objects in different ways, beginning to recognise that the total is still the same. ▪ Solve real world mathematical problems with numbers up to 5. ▪ Beginning to use understanding of number to solve practical problems in play and meaningful activities	▪ 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. ▪ Automatically recall number bonds for numbers 0–10. ▪ In practical activities, adds one and subtracts one with numbers to 10 ▪ Begins to explore and work out mathematical problems, using signs and strategies of their own choice, including (when appropriate) standard numerals, tallies and "+" or "-"	▪ represent and use number bonds and related subtraction facts within 20 ▪ add and subtract one-digit and two-digit numbers to 20, including zero ▪ read, write and interpret mathematical statements involving addition (+), subtraction (-) and equals (=) signs ▪ solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as 7 = □ - 9	▪ 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. ▪ 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 ▪ solve simple problems in a practical context involving addition and subtraction of money of the same unit, including giving change

	Vocabulary	***More*** ***Less*** ***Altogether***	***Add*** ***Addition*** ***Double*** ***Sum*** ***Take away*** ***Total***	***Number line*** ***Make*** ***Half*** ***Halve*** ***Equals*** ***Is the same*** ***How many more to make…? How many more is,,,*** ***then,,,?*** ***How much more is…?*** ***Subtract*** ***Minus***	***Number bonds*** ***Inverse*** ***Near doubles*** ***Difference between*** ***How many fewer is…than…?*** ***How much less is…?***	***Plus*** ***Total*** ***Score*** ***Near*** ***One more, two more… ten more…*** **one hundred more** ***How many more to make…?*** ***How many more is… than…?*** ***How much more is…?*** ***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…?*** ***Sign/Symbol*** **Tens boundary**
	MULTIPLICATION AND DIVISION	▪ In everyday situations gives or takes 2 or 3 objects from a group.	▪ Match and sort objects that are the same, such as 2 tigers, a pair of tigers. ▪ Beginning to compare a set of objects and use the language of the *'same'*	▪ Begin to understand that some quantities will share equally into 2 groups. ▪ Make doubles practically ▪ Automatically recall some double facts.	▪ Count in multiples of twos, fives and tens ▪ 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	▪ Count in steps of 2, 3, and 5 from 0, and in tens from any number, forward or backward ▪ recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers ▪ Show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot ▪ Calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication (×), division (÷) and equals (=) signs ▪ Solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts

	Vocabulary	***Group***	***Sharing*** ***Doubling*** ***Halving*** ***Number patterns***	***Odd*** ***Even*** ***Halve*** ***Share*** ***Share equally*** ***Group in pairs*** ***Equal groups of*** ***Divide,***	***Once, twice, three times, five*** ***Times*** ***Count in tens (forwards from/ backwards from)*** ***How many times? L*** ***Lots of*** ***Groups of*** ***Multiple of*** ***Times*** ***Multiply*** ***Multiply by*** ***Repeated addition*** ***Array*** ***Row*** ***Column*** ***Group in twos*** ***Threes*** ***Divided by*** ***Left*** ***Left over***	***Multiplied by*** ***Multiple of*** ***Once, twice, three times, four times, five times… ten times… times as*** ***Repeated addition*** **Double** ***one each, two each, three each…*** ***group in pairs, threes, tens*** ***equal groups of*** ***Divide*** ***Divided into***
	FRACTIONS	▪ Begin to compare and recognise changes in numbers of things, using words like *more, lots or 'same'*	▪ Can share a set of objects between 2 people.	▪ Begin to understand that some quantities will share equally into 2 groups.	▪ 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	▪ Pupils should count in fractions up to 10, starting from any number and using the1/2 and 2/4 equivalence on the number line ▪ Recognise, find, name and write fractions $^{1}/_{3}$, $^{1}/_{4}$, $^{2}/_{4}$ and $^{3}/_{4}$ of a length, shape, set of objects or quantity ▪ Write simple fractions e.g. $^{1}/_{2}$ of 6 = 3 and recognise the equivalence of $^{2}/_{4}$ and $^{1}/_{2}$.
	Vocabulary	***More*** ***Lots*** ***Same***	***Part of a whole*** ***Half***	***Whole*** ***Equal*** ***One half***	***Equal parts*** ***Four*** ***Equal parts*** ***Two halves*** ***A quarter*** ***Two quarters***	***Part*** ***Fraction*** ***One whole*** ***One half*** ***Two halves*** ***One quarter, two… three… four*** ***Quarters*** ***Third***
PLACE VALUE	**COUNTING**	▪ Take part in finger rhymes with numbers. ▪ Count in everyday contexts, sometimes	▪ Develop fast recognition of up to 3 objects,	▪ Subitise. ▪ Link the number symbol (numeral)	▪ Count to and across 100, forwards and backwards, beginning with 0 or 1, or from any given number	▪ Count in steps of 2, 3, and 5 from 0, and in tens from any number, forward or backward

		skipping numbers - '1-2-3-5.' ▪ Beginning to count on their fingers ▪ In everyday situations, takes or gives two or three objects from a group ▪ Develop counting-like behaviour, such as making sounds, pointing ▪ Develop counting-like behaviour, such as saying some numbers in sequence ▪ May be aware of number names through their enjoyment of action rhymes and songs that relate to numbers ▪ Uses number words, like one or two and sometimes responds accurately when asked to give one or two things ▪ Says some counting words ▪ May engage in counting-like behaviour, making sounds and pointing or saying some numbers in sequence ▪ Knows that a number name means an amount.	without having to count them individually ('subitising') ▪ Counts up to five items, recognising that the last number said represents the total counted so far (cardinal principle) ▪ Show 'finger numbers' up to 5. ▪ Link numerals and amounts: for example, showing the right number of objects to match the numeral, up to 5. ▪ Recognises the quantities of 1, 2, 3 on their own without counting. (subitises) ▪ Recognises 5 fingers on each hand ▪ May enjoy counting verbally as far as they can go ▪ Counts reliably to 5. ▪ Know when to stop saying number names when counting a set. (Cardinality)	with its cardinal number value. ▪ Counts out up to 10 objects from a larger group ▪ Matches the numeral with a group of items to show how many there are (up to 10) ▪ Subitise (recognise quantities without counting) up to 5; ▪ Count objects, actions and sounds. ▪ Count beyond ten.	▪ Count, read and write numbers to 100 in numerals; count in multiples of twos, fives and tens ▪ Given a number, identify one more and one less	

			▪ Know that the last number reached when counting a small set of objects tells you how many there are in total ('cardinal principle'). ▪ Points or touches (tags) each item, saying one number for each item, using the stable order of 1,2,3,4,5 ▪ Recognises the number name and the quantity accurately. ▪ Experiment with their own symbols and marks as well as numerals.			
	Vocabulary	***One, two three (used in rhyme/counting objects)***	***Zero, one, two three.. to ten*** ***How many?***	***Zero, number one, two, three … to ten, numbers*** ***Eleven, twelve … twenty*** ***How many …?*** ***Count*** ***Count (up) to*** ***Count on (from, to)*** ***Count back (from, to)*** ***Count in ones, twos, fives, tens*** ***Is the same as*** ***More*** ***Less,*** ***Even*** ***Few*** ***Pattern*** ***Pair***	**Zero, one, two, three… to twenty and beyond** **Zero, ten, twenty… one, hundred** **Count in tens** **Many** **Few** **Odd** **Even** **Every other** **How many times?**	**Count in ones, twos, *threes, fours, fives and so on*** ***Count* in tens** ***T*ally** ***Multiple of*** ***Sequence*** ***Continue*** ***Predict*** ***P*attern** **Pair** ***Rule***

	COMPARING NUMBERS	▪ Beginning to notice numerals (Number symbols) ▪ Compare amounts, saying 'lots', 'more' or 'same'.	▪ Recognises some numerals accurately. (0-10) ▪ Recognises number structures to 5. ▪ Compares two small groups of up to five objects, saying when there are the same number of objects in each group, e.g. You've got two, I've got two. Same! ▪ Compare quantities using language: 'more than', 'fewer than'.	▪ Explore the composition of numbers to 10. ▪ Uses number names and symbols when comparing numbers, showing interest in large numbers ▪ 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 ▪ Compare numbers. ▪ Understand the 'one more than/one less than' relationship between consecutive numbers.	▪ Use the language of: equal to, more than, less than (fewer), most, least	▪ Compare and order numbers from 0 up to 100; use <, > and = signs
	Vocabulary	***Lots*** ***More*** ***Same***	***Same as*** ***Fewer than*** ***More than*** ***Greater than***	***More than*** ***Greater than*** ***Less than*** ***Fewer than*** ***Same as***	***Equal to*** ***More than*** ***Less than*** ***Greater than*** ***Fewer than*** ***Most*** ***Least***	***Use symbols alongside the language of fewer than, greater than, equal***

	PLACE VALUE	▪ Says some counting words ▪ Begins to say numbers in order, some of which are in the right order	▪ Beginning to recognise that each counting number is one more than the one before. ▪ Recite numbers past 5. ▪ Say one number for each item in order: 1,2,3,4,5. ▪ Uses some number names and number language within play, and may show fascination with large numbers	▪ Have a deep understanding of number to 10, including the composition of each number. ▪ Estimates of numbers of things, showing understanding of relative size. ▪ Enjoys reciting numbers from 0 to 10 (and beyond) and back from 10 to 0 ▪ Increasingly confident at putting numerals in order 0 to 10 (ordinality) ▪ Explore and represent patterns within numbers up to 10, including evens and odds, double facts and how quantities can be distributed equally.	▪ Identify and represent numbers using objects and pictorial representations including the number line ▪ Read and write numbers from 1 to 20 in numerals and words.	▪ Identify, represent and estimate numbers using different representations, including the number line ▪ Read and write numbers to at least 100 in numerals and in words ▪ Recognise the place value of each digit in a two-digit number (tens, ones) ▪ Use place value and number facts to solve problems

	Vocabulary	***Lots*** ***More*** ***Bigger*** ***Some*** ***One, two, three***	***Before,*** ***Between*** ***Compare*** ***Count*** ***Digit*** ***Fewer*** ***First, second, third…*** ***Greater*** ***How many?*** ***Is the same as…*** ***Last*** ***Less*** ***Next*** ***Number*** ***One, two three… to twenty*** ***Ones*** ***Tens,*** ***Order*** ***Pair*** ***Pattern*** ***Zero***	***Number one, two, three to twenty and beyond*** ***None*** ***Count*** ***On/up/to/from/down before, after*** ***More*** ***Less*** ***Many*** ***Few*** ***Fewer*** ***Fewest*** ***Smaller*** ***Smallest*** ***Equal to*** ***The same as*** ***Odd*** ***Even*** ***Digit*** ***Numeral*** ***Compare*** ***Order*** ***Size*** ***Value*** ***Between*** ***Halfway between***	***Units*** ***Ones*** ***Tens*** ***Exchange*** ***The same number as,*** ***As many as…*** ***Equal to*** ***Greater*** ***Larger*** ***Greatest*** ***Most*** ***Biggest*** ***Largest*** ***Least*** ***Fewest*** ***One more, ten more, one less, ten less*** ***Compare*** ***Order*** ***Size*** ***First, second, third… tenth, eleventh… twentieth*** ***Last*** ***Last but one*** ***Before*** ***After*** ***Next*** ***Above*** ***Below***	***Hundreds*** ***One-, two- or three-digit number*** ***Teens number*** ***Place*** ***Place value*** ***Stands for*** ***Represents*** ***Exchange*** ***The same number as..*** ***As many as*** ***Equal to*** ***One more*** ***Ten more*** ***One less*** ***Ten less*** ***Twenty-first, twenty-second…***
SHAPE	**GEOMETRY-PROPERTIES OF SHAPE**	▪ Complete inset puzzles. ▪ Explores differently sized and shaped objects ▪ Beginning to put objects of similar shapes inside others and take them out again ▪ Stacks objects using flat surfaces ▪ Responds to changes of shape ▪ Attempts, sometimes successfully, to match	▪ Select shapes appropriately: flat surfaces for building, a triangular prism for a roof etc. ▪ Talk about and explore 2D and 3D shapes (for example, circles, rectangles, triangles and cuboids) using	▪ Compose and decompose shapes so that children recognise a shape can have other shapes within it, just as numbers can. ▪ Uses informal language and analogies, (e.g. heart-shaped and hand-shaped leaves), as well as mathematical terms to describe shapes	▪ Recognise and name common 2-D and 3-D shapes, including: ▪ 2-D shapes [e.g. rectangles (including squares), circles and triangles] ▪ 3-D shapes [e.g. cuboids (including cubes), pyramids and spheres].	▪ Identify and describe the properties of 3D shapes including the number of edges and vertices and faces. ▪ Identify 2D shapes on the surface of 3D shapes, for example circle on a cylinder and a triangle on a pyramid. ▪ Compare and sort common 2D and 3D shapes and every day objects.

		shapes with spaces on inset puzzles ▪ Enjoys using blocks to create their own simple structures and arrangements ▪ Chooses puzzle pieces and tries to fit them in ▪ Recognises that two objects have the same shape ▪ Makes simple constructions	informal and mathematical language: 'sides', 'corners'; 'straight', 'flat', 'round'. ▪ Combine shapes to make new ones – e.g., arches, enclosures, bigger triangle etc. (using both 2D and 3D shapes) ▪ Knows the names of some shapes. ▪ Knows the names of some solid shapes. ▪ Shows awareness of shape similarities and differences between objects	▪ Uses own ideas to make models of increasing complexity, selecting blocks needed, solving problems and visualising what they will build ▪ Select, rotate and manipulate shapes in order to develop spatial reasoning skills.		

	Vocabulary	***Circle*** ***Round***	***Square*** ***Triangle*** ***Oblong***	***Sort*** ***Cube*** ***Cuboid,*** ***Pyramid*** ***Sphere*** ***Cone*** ***Cylinder*** ***Square shape*** ***Flat*** ***Curved*** ***Straight*** ***Solid*** ***Corner*** ***Face*** ***Side*** ***Make*** ***Build*** ***Draw***	***Shape*** ***Pattern*** ***Flat*** ***Curved*** ***Straight*** ***Round,*** ***Hollow,*** ***Solid*** ***Corner*** ***Point*** ***Pointed*** ***Edge*** ***End*** ***Sort*** ***3D shape*** ***Cube*** ***Cuboid*** ***Pyramid*** ***Cylinder*** ***2D shape*** ***star***	***Pointed*** ***Vertex*** ***Vertices*** **Surface** ***Pyramid*** ***Cone,*** **Circular** **Triangular** **Rectangular,** **Pentagon** **Hexagon** **Octagon** ***Symmetry*** ***Bigger*** ***Larger*** ***Smaller*** ***Symmetrical*** ***Line of symmetry*** ***Fold*** ***Match*** ***Mirror line*** ***Reflection*** ***Repeating pattern***
	GEOMETRY-POSITION AND DIRECTION	▪ Combine objects like stacking blocks and cups. Put objects inside others and take them out again. ▪ Climb and squeeze themselves into different types of spaces. Build with a range of resources. ▪ Explores space around them and engages with position and direction, such as pointing to where they would like to go ▪ Developing an awareness of their own bodies, that their body has different parts and where these are in relation to each other	▪ Describe a familiar route. ▪ Discuss routes and locations, using words like 'in front of' and 'behind'. ▪ Knows some positional language. ▪ Understand position through words alone – for example, "The bag is under the table," – with no pointing. ▪ Predicts, moves and rotates objects	▪ Uses spatial language, including following and giving directions, using relative terms and describing what they see from different viewpoints ▪ Investigates turning and flipping objects in order to make shapes fit and create models; predicting and visualising how they will look (spatial reasoning) ▪ May enjoy making simple maps of familiar and	▪ Describe position, direction and movement, including half, quarter and three-quarter turns.	▪ 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 three-quarter turns (clockwise and ▪ Anti-clockwise) ▪ Order and arrange combinations of mathematical objects in patterns and sequences

		▪ Moves their bodies and toys around objects and explores fitting into spaces ▪ Begins to remember their way around familiar environments ▪ Explores how things look from different viewpoints including things that are near or far away	to fit the space or create the shape they would like	imaginative environments, with landmarks		
	Vocabulary	***Up*** ***Down*** ***Forwards*** ***Backwards*** ***Over*** ***Under***	***Side*** ***On*** ***In*** ***Outside*** ***Inside*** ***In front*** ***Behind*** ***Front*** ***Back***	***Over*** ***Under*** ***Underneath*** ***Above*** ***Below*** ***Top*** ***Bottom*** ***Front*** ***Back*** ***Before*** ***After*** ***Beside*** ***Next to*** ***Middle*** ***Up*** ***Down*** ***Forwards*** ***Backwards*** ***Sideways*** ***Close*** ***Far*** ***Through*** ***Towards*** ***Away*** ***From*** ***Side*** ***Roll*** ***Turn***	***Position*** ***Around*** ***Opposite*** ***Apart*** ***Between*** ***Edge*** ***Centre*** ***Corner*** ***Direction*** ***Journey*** ***Left*** ***Right*** ***Across*** ***Near*** ***Along*** ***To*** ***From*** ***Movement*** ***Whole turn*** ***Half turn*** ***Stretch*** ***Bend***	***Position*** ***Opposite*** ***Apart*** ***Middle*** **Route** **Higher** **Lower** ***Forwards*** ***Backwards*** ***Sideways*** ***Along*** ***Through*** ***Towards*** ***Away*** ***From*** ***Clockwise*** ***Anti-clockwise*** ***Slide*** ***Roll*** ***Quarter turn*** ***Right angle*** ***Straight line*** ***Stretch*** ***Bend***
MEASUREMENT	**TIME**	▪ Beginning to understand some talk about immediate past and future ▪ Beginning to anticipate times of the day such	▪ Recalls a sequence of events in everyday life and stories	▪ Is increasingly able to order and sequence events using everyday language related to time	▪ Compare, describe and solve practical problems for: ▪ Time [e.g. quicker, slower, earlier, later] ▪ Sequence events in chronological order using	▪ Compare and sequence intervals of time ▪ Tell and write the time to five minutes, including quarter past/to the hour and draw the hands on a clock face to show these times.

		as mealtimes or home time ▪ Gets to know and enjoys daily routine		▪ Beginning to experience measuring time with timers and calendars	language [e.g. before and after, next, first, today, yesterday, tomorrow, morning, afternoon and evening] ▪ Measure and begin to record the following: ▪ Time (hours, minutes, seconds) ▪ Tell the time to the hour and half past the hour and draw the hands on a clock face to show these times. ▪ Recognise and use language relating to dates, including days of the week, weeks, months and years	▪ know the number of minutes in an hour and the number of hours in a day.
	Vocabulary	***Snack time*** ***Home time*** ***Story time***	***Today*** ***Yesterday*** ***Tomorrow*** ***Morning*** ***Afternoon*** ***Evening*** ***Night-time*** ***Lunchtime*** ***Dinner time*** ***Breakfast***	***Bath time*** ***Bedtime*** ***Next week*** ***Last week*** ***This month*** ***What day is it today?*** ***What day is it tomorrow?*** ***What day was it yesterday? Birthday***	*Days of the week: Monday-Tuesday* *Seasons: Spring, Summer, Autumn, Winter* *Day* *Week* *Month* *Year* *Weekend* *Holiday* *Midnight*	**Fortnight** ***Year*** ***Morning AM*** ***Afternoon PM*** ***Quickest*** ***Slowest*** ***Oldest*** ***Newest*** ***Minute*** **Second** ***Quarter to*** ***Quarter past*** ***Five minute intervals*** ***Digital clock*** ***Analogue clock*** ***Watch*** ***Timer*** ***how often?*** ***Always*** ***Never*** ***Often*** ***Sometimes*** ***Usually*** ***Once*** ***Twice***

					Yesterday *Tomorrow* *Before* *After* *Next* *Last* *Now* *Soon* *Early* *Late* *Quick* *Quicker* *Quickest* *Quickly* *Fast* *Faster* *Fastest* *Slow* *Slower* *Slowest,* *Slowly* *Old* *Older* *Oldest* *New* *Newer* *Newest* *Takes longer* *Takes less time,* *Hour* *O'clock* *Half past* *Clock* *Watch,* *Hands* *How long ago?* *How long will it be to…?* *How long will it take to…?* *How often?* *Always,* *Never* *Often,* *Sometimes* *Usually* *Once* *Twice*	

	LENGTH AND HEIGHT	▪ Compare sizes, weights etc. using gesture and language - 'bigger/little/smaller', 'high/low', 'tall', 'heavy'. ▪ Responds to size, reacting to very big or very small items that they see or try to pick up ▪ Shows an interest in objects of contrasting sizes in meaningful contexts ▪ Explores differences in size, length	▪ Make comparisons between objects relating to size, length. ▪ Shows an understanding of comparison. ▪ In meaningful contexts, finds the longer or shorter, of two items	▪ Compare length ▪ Enjoys tackling problems involving prediction and discussion of comparisons of length, paying attention to fairness and accuracy ▪ Becomes familiar with measuring tools in everyday experiences and play	▪ Compare, describe and solve practical problems for: ▪ Lengths and heights [e.g. long/short, longer/shorter, tall/short, double/half] ▪ Measure and begin to record the following: ▪ Lengths and heights	▪ Compare and order lengths, and record the results using >, < and = ▪ Choose and use appropriate standard units to estimate and measure **length/height** in any direction (m/cm); to the nearest appropriate unit, using rulers.
	Vocabulary	***Big*** ***Bigger*** ***Small*** ***Smaller*** ***High*** ***Low*** ***Tall*** ***Short***	***Longer*** ***Shorter***	***Compare*** ***Guess*** ***Measure*** ***Size*** ***Length*** ***Depth*** ***Height*** ***Long*** ***Short*** ***Tall*** ***Width***	***Length*** ***Width*** ***Depth*** ***High*** ***Low*** ***Wide*** ***Narrow*** ***Deep*** ***Shallow*** ***Thick*** ***Thin*** ***Longer*** ***Shorter*** ***Taller*** ***Higher*** ***Longest*** ***Shortest*** ***Tallest*** ***Highest*** ***Far*** ***Near*** ***Close*** ***Metre*** ***Ruler*** ***Metre stick***	*Furthest* *Metre (m)* *Centimetre (cm)* *Low* *Wide* *Narrow* *Deep* *Shallow*

	MASS	▪ Compare sizes, weights etc. using gesture and language - 'bigger/little/smaller', 'high/low', 'tall', 'heavy'. ▪ Responds to size, reacting to very big or very small items that they see or try to pick up ▪ Shows an interest in objects of contrasting sizes in meaningful contexts ▪ Explores differences in size, weight	▪ Make comparisons between objects relating to size, weight ▪ Shows an understanding of comparison. ▪ In meaningful contexts, finds the heavier or lighter of two items	▪ Compare weight ▪ Enjoys tackling problems involving prediction and discussion of comparisons of weight or paying attention to fairness and accuracy ▪ Becomes familiar with measuring tools in everyday experiences and play	▪ Compare, describe and solve practical problems for: ▪ Mass/weight [e.g. heavy/light, heavier than, lighter than] ▪ Measure and begin to record the following: ▪ Mass/weight	▪ Compare and order mass, and record the results using >, < and = ▪ Choose and use appropriate standard units to estimate and measure mass (kg/g); to the nearest appropriate unit, using scales.
	Vocabulary	***Heavy*** ***Light***	***Weigh*** ***Weighs*** ***Balance*** ***Heavy*** ***Light***	***Heavier*** ***Heaviest*** ***Lighter*** ***Lightest*** ***Scales***	***Heavier*** ***Lighter***	**Kilogram (kg)** **Half-kilogram** **Grams (g)** ***How many grams are in one kilogram?***
	CAPACITY	▪ Explores capacity by selecting, filling and emptying containers, e.g. fitting toys in a pram ▪ Explores differences in size and capacity ▪ Enjoys filling and emptying containers	▪ Make comparisons between objects relating to size and capacity. ▪ Shows an understanding of comparison. ▪ In meaningful contexts, finds the more/less full of two items	▪ Compare capacity. ▪ Enjoys tackling problems involving prediction and discussion of comparisons of capacity, paying attention to fairness and accuracy ▪ Becomes familiar with measuring tools in everyday experiences and play	▪ Compare, describe and solve practical problems for: ▪ Capacity and volume [e.g. full/empty, more than, less than, half, half full, quarter] ▪ Measure and begin to record the following: ▪ Capacity and volume	▪ Compare and order volume/capacity and record the results using >, < and = ▪ Choose and use appropriate standard units to estimate and measure capacity (litres/ml) to the nearest appropriate unit, using measuring vessels
	Vocabulary	***Full*** ***Empty***	***More*** ***Less***	***Container/Vessel*** ***Capacity***	***Half full*** ***Holds***	**Volume** **Litre (l)** **Half-litre** **Millilitre (ml)**

	MONEY	• Become familiar with money through rhymes and songs, e.g. 5 currant buns	Solve real world mathematical problems up to 5. e.*g. do you have enough money to buy the toy car that costs 5p?*	In practical activities, adds one and subtracts one with numbers to 10	▪ Recognise and know the value of different denominations of coins and notes	▪ Recognise and use symbols for pounds (£) and pence (p); combine amounts to make a particular value ▪ 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
	Vocabulary	*Money* *Coin*	*Penny* *Pence*	*Buy*	***Pound (£)*** ***Pence (p)*** ***Price*** ***Cost*** ***Bought*** ***Sell*** ***Sold***	*Spend* *Spent* *Pay* *Change* *Dear* *Costs more* *Cheap* *Costs less* *Cheaper* *How much…?* *How many…?* *Total*
STATISTICS	**STATISTICS**	Compare amounts saying lots, 'more' and 'the same.' ▪ Notice patterns and arrange things in patterns.	Compare quantities using language 'more than, fewer than.' ▪ Talk about and identify the patterns around them.	Compare number. Use vocabulary, 'more than' less then' 'equal to' ▪ Spots patterns in the environment, beginning to identify the pattern "rule"	▪ Sort objects into different categories and amounts. ▪ Use building blocks to represent different amounts of objects in each category. ▪ Construct simple tally charts. ▪ Answer simple questions about pictograms and block diagrams.	▪ 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
	Vocabulary	***Lots*** ***More*** ***The same***	***More than*** ***Greater than*** ***Fewer than***	***Equal to***	***Count*** **Tally** *Sort* ***Vote*** **Graph** **Block graph** **Pictogram** **Represent** ***Group*** ***Set*** ***List***	**Most popular** **Most common** **Least popular** **Least common**

					Table **Label** **Title**	
PATTERN	**PATTERN**	▪ Shows interest in patterned songs and rhymes, perhaps with repeated actions ▪ Experiences patterned objects and images ▪ Begins to predict what happens next in predictable situations ▪ Joins in with repeated actions in songs and stories ▪ Notice patterns and arrange things in patterns. ▪ Joins in and anticipates repeated sound and action patterns ▪ Is interested in what happens next using the pattern of everyday routines	▪ Talk about and identify the patterns around them. For example: stripes on clothes, designs on rugs and wallpaper. Use informal language. like 'pointy', 'spotty', 'blobs' etc ▪ Extend and create ABAB patterns – stick, leaf, stick, leaf and then ABC stick, leaf, stone ▪ Notice and correct an error in a repeating pattern. ▪ Begin to describe a sequence of events, real or fictional, using words such as 'first', 'then...' ▪ Joins in with simple patterns in sounds, objects, games and stories dance and movement, predicting	▪ Continue, copy and create repeating patterns. ▪ Spots patterns in the environment, beginning to identify the pattern "rule" ▪ Chooses familiar objects to create and recreate repeating patterns beyond AB patterns and begins to identify the unit of repeat		

			what comes next ▪ Creates their own spatial patterns showing some organisation or regularity			
	Vocabulary	***Repeating a pattern using informal language first- spotty, stripy, blobs***	***Using informal language first- spotty, stripy, blobs*** pointy, spotty repeating a pattern using informal language first	***First*** ***Next*** ***Last***		
REASONING **This is embedded throughout each area of Mathematics**		**Creating and Thinking Critically** Develop their own ideas, make links between ideas, and develop strategies for doing things.		▪ Engage with rich contexts for exploring mathematical ideas, making useful connections and developing mathematical skills and concepts ▪ Make connections to theme and connect learning to play.	▪ Apply conceptual knowledge to recognise patterns and relationships, **to show** results using clear mathematical models such as practical apparatus, diagrams or number sentences. ▪ Explanation- Why is something true or not true?	▪ Apply conceptual knowledge to recognise patterns and relationships, **to explain** results using clear mathematical models such as practical apparatus, diagrams or number sentences. ▪ Use models of proof

Year 1 NC

Number and Place Value

- count to and across 100, forwards and backwards, beginning with 0 or 1, or from any given number
- count, read and write numbers to 100 in numerals; count in multiples of twos, fives and tens
- given a number, identify one more and one less
- 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
- read and write numbers from 1 to 20 in numerals and words.

Number: Addition and subtraction, Multiplication and Division, Fractions

- 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 $7 = \square - 9$.
- 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.

Measurement

- compare, describe and solve practical problems for:
  - lengths and heights [for example, long/short, longer/shorter, tall/short, double/half]
  - mass/weight [for example, heavy/light, heavier than, lighter than]
  - capacity and volume [for example, full/empty, more than, less than, half, half full, quarter]
  - time [for example, quicker, slower, earlier, later]
- measure and begin to record the following:
  - lengths and heights
  - mass/weight
  - capacity and volume
  - time (hours, minutes, seconds)
- recognise and know the value of different denominations of coins and notes
- sequence events in chronological order using language [for example, before and after, next, first, today, yesterday, tomorrow, morning, afternoon and evening]
- 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.

Shape, Position and direction

- recognise and name common 2-D and 3-D shapes, including:
  - 2-D shapes [for example, rectangles (including squares), circles and triangles]
  - 3-D shapes [for example, cuboids (including cubes), pyramids and spheres].
  - describe position, direction and movement, including whole, half, quarter and three-quarter turns.

Year 2 NC

Number and place value

- count in steps of 2, 3, and 5 from 0, and in tens from any number, forward and backward
- recognise the place value of each digit in a two-digit number (tens, ones)
- identify, represent and estimate numbers using different representations, including the number line
- compare and order numbers from 0 up to 100; use <, > and = signs
- read and write numbers to at least 100 in numerals and in words

use place value and number facts to solve problems.

Number: Addition and subtraction, Multiplication and Division, Fractions

- 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.

- 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 (×), division (÷) and equals (=) signs
- show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot

solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts.

- recognise, find, name and write fractions $\frac{1}{3}$, $\frac{1}{4}$, $\frac{2}{4}$ and $\frac{3}{4}$ of a length, shape, set of objects or quantity
- write simple fractions for example, $\frac{1}{2}$ of 6 = 3 and recognise the equivalence of $\frac{2}{4}$ and $\frac{1}{2}$.

Measurement

- choose and use appropriate standard units to estimate and measure length/height in any direction (m/cm); mass (kg/g); temperature (°C); capacity (litres/ml) to the nearest appropriate unit, using rulers, scales, thermometers and measuring vessels
- compare and order lengths, mass, volume/capacity and record the results using >, < and =
- recognise and use symbols for pounds (£) and pence (p); combine amounts to make a particular value
- 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
- compare and sequence intervals of time
- tell and write the time to five minutes, including quarter past/to the hour and draw the hands on a clock face to show these times
- know the number of minutes in an hour and the number of hours in a day.

Shape, Position and direction

- identify and describe the properties of 2-D shapes, including the number of sides and line symmetry in a vertical line
- 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 [for example, a circle on a cylinder and a triangle on a pyramid]

compare and sort common 2-D and 3-D shapes and everyday objects.

- 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 three-quarter turns (clockwise and anti-clockwise).

Statistics

- 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