Maths Curriculum Progression

INTENT: At Lyndhurst we aim to provide a foundation for understanding the world by **linking maths to 'real-life' situations**. We realise the importance of children having **the ability to reason mathematically** and use STEM sentences and sentence starters to ensure that we progressively teach the skills of talking about maths**. Problem solving skills** are taught through the use of our Divergent Thinking Toolbox, with simple problem solving strategies introduced, explored and shared with the children to develop their ability to solve non-routine problems. We aim to develop a sense of **enjoyment and curiosity about mathematics** whilst building the key skills to become a fluent mathematician. Procedural and conceptual variation are planned for to ensure that children make links with prior learning and knowledge.

Our aim is for pupils to:

- 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 through a variety of methods such as following a line of enquiry, investigative activities using our chosen four Divergent Thinking tools, and justifying or proving using mathematical language.
- solve problems by applying their mathematics to a variety of routine and non-routine problems with increasing sophistication.

	EYFS	YEAR 1	YEAR 2
NUMBER AND PLACE VALUE: **IMPLEMENTATION**	The links between concrete, abstract and pictorial representations are planned for at all times. Number will consistently be presented to children making the links between these images by counting physical objects that can be moved, pictorial images/sounds that can't be moved and linking to the written number and its position on a number track/line. Manipulatives such as cubes, counters, Numicon and Dienes will be used when appropriate to the child's understanding of place value, with jottings such as 'chips and peas' being introduced in KS1 to link the concrete to the pictorial and the pictorial to the abstract. Conceptual variation is used throughout to reinforce conservation of number using the key questions '**What is the same? What is different?'**		
	Children will count objects, images and sounds with increasing 1:1 correspondence, linking the final number of the count to the written numeral. Conceptual variation in the ways that numbers are presented will reinforce conservation of number. Children will begin to be able to count in 10's to 100 and 2's to at least 10.	Children will count larger numbers of objects, images and sounds with accurate 1:1 correspondence. They will recognise, read and write numbers up to 100, with conceptual variation used to reinforce an understanding of a number, including the use of a variety of place value images. There will be a strong link between concrete (Numicon and Dienes) and abstract (numerical) representations, and an introduction to pictorial images such as 'chips and peas'. Children will be able to count in 10's, 2's up to 20 and begin to be able to count in 5's.	Children will read, write and count numbers forwards and backwards to 100 and then beyond, comparing them using the < > and = signs. Conceptual variation of place value will reinforce a secure understanding the value of each digit in a 2-digit number and how 2-digit numbers can be split into different combinations of tens and ones. There will be a strong link between concrete (Numicon and Dienes) and pictorial ('chips and peas') representations to support understanding of abstract concepts such as place value. Children will be able to count in 2's, 5's and 10's as well as begin to be able to count in 3's.
Developing Reasoning	I have counted ( ) altogether. ( ) comes before ( ). ( ) comes after ( ). One more than ( ) is ( ). One less than ( ) is ( ). ( ) more than ( ) is ( ). ( ) less than ( ) is ( ).	( ) comes before ( ). ( ) comes after ( ). ( ) more than ( ) is ( ). ( ) less than ( ) is ( ). This is different because…. This is the same because….	It must be because…… It can't be because….. This is different because…. This is the same because…. If….then…..
Key people and 'real-life' links	Understand the significance of numerals, subitising numbers and moving to subitising place value images, sorting numbers, ordering numbers, recognising difference in numbers, postman, comparing amounts (eg prices/weights/lengths..), train driver/ driver, police officer, business owner		
	Children will gain a solid understanding of numbers and the number system up to 20 and then up to at least 100. They will be able to partition 2-digit numbers in different ways and understand the values of the digits. They will be able to count sequences of numbers,		

IMPACT:	forwards and backwards, and be able to count in different steps from 0, linking this to reading scales and graphs. The language associated with number and comparing numbers will be a common thread throughout.

	EYFS	**YEAR 1**	**YEAR 2**
NUMBER ADDITION AND SUBTRACTION:	The progression through teaching addition and subtraction will be carefully planned for. Children need to secure their knowledge at a stage before progressing further. A solid understanding of place value is required before moving on to the +/- of 2-digit numbers and tens and two 2-digit numbers. Procedural variation will be emphasised throughout to ensure that children see the links between different calculations and facts that they know.		
IMPLEMENTATION	Children will use concrete objects and pictorial images to support the concepts of addition and subtraction. Cubes, counters and other individual items will be used to secure understanding of 1:1 correspondence when calculating. Addition and subtraction facts to 5 will be explicit throughout teaching, with some doubling facts to 10. Variation will highlight the patterns when teaching addition and subtraction facts to 5.	Children will +/- 2-digit numbers and ones and 2-digit numbers and tens, linking concrete, pictorial and abstract representations. Procedural variation will be explicit to try to develop links to known facts. Base 10 manipulatives will be used to ensure efficiency of methods when children have an understanding of place value. Knowing number bonds to 10 and related subtraction facts will underpin their mathematical fluency and will be explicit throughout teaching. Simple problems will be used in a range of 'real-life' contexts.	Children will +/- 2-digit numbers and ones, 2-digit numbers and tens and two 2-digit numbers, including crossing boundaries. Procedural variation will make links between known facts and simpler calculations, encouraging children to calculate fluently. Base 10 manipulatives will be used and efficient jotting methods taught to make the link between concrete, abstract and pictorial representations. Using and applying doubles and halves, as well as number facts and related subtraction facts to 20 will be explicit in teaching. Children will solve problems in a range of 'real-life' contexts including measures and money.
Developing Reasoning	I have ( ) and he/she has ( ) so we have ( ) altogether. I had ( ) and took ( ) away so now I have ( ) left. ( ) more than ( ) is ( ). ( ) less than ( ) is ( ).	I have ( ) and he/she has ( ) so we have ( ) altogether. I had ( ) and took ( ) away so now I have ( ) left. ( ) more than ( ) is ( ). ( ) less than ( ) is ( ). I checked by…… I already know that… so…. I noticed that…..	It must be because…… It can't be because….. If…. then….. I checked by…… I already know that…. so……. I know my answer is reasonable because… I noticed that…. I agree with…. because….

Key people and 'real-life' links	Shopping, knowing 'How many?' there are after +/- changes, solving +/- problems in relation to measures/length/weight etc, accountant, merchandising manager, cooking, adjusting recipes/quantities, astronaut, computer/game programmer
IMPACT	Children will gain a solid understanding of the concepts of addition and subtraction. They will make links between facts that they know and use these to support solving unfamiliar calculations. Procedural links (such as commutativity and 4 + 5 = 9, 14 + 5 = 19, 40 + 50 = 90) when modelled explicitly, will embed an understanding of numbers and support the children in developing the ability to calculate fluently. Key addition and subtraction facts will underpin teaching and be explicitly taught to develop mathematical fluency. All skills in calculating will be applied to a range of routine and non-routine problem solving activities to ensure that children are able to apply their mathematics.

	EYFS	**YEAR 1**	**YEAR 2**
NUMBER MULTIPLICATION AND DIVISION:	The progression through teaching multiplication and division will be carefully planned for. Children need to secure their knowledge at a stage before progressing further. Practical activities will reinforce a solid understanding of repeated addition and equal division. Clear links will be made between doubling and x 2 and halving and ÷ 2. Children will be taught to look at ÷ calculations in a variety of ways to develop efficient methods to solve them. Conceptual variation will be used to secure understanding of concepts.		
IMPLEMENTATION	Children will practically explore 'real-life' problems that involve doubling, halving and sharing. They will use number tracks and concrete manipulatives such as coins and Numicon to begin to count in steps of 2 and 10.	Children will count in steps of 2, 5 and 10, recognising patterns in the numbers and odds and evens through explicit teaching. Links between concrete, pictorial (including arrays) and abstract representations will identify the concepts of 'lots of' and 'sharing equally' to solve problems, so that a clear understanding is made between X and + as well as ÷ and -. Conceptual variation will be used through different images to represent multiplication and division problems.	Children will count in steps of 2, 3, 5 and 10, recognising patterns in the numbers and odd and evens through explicit teaching. Procedural variation will highlight that multiplication is commutative but division is not. Links between concrete, pictorial and abstract representations will support problem solving and highlight the link between X and repeated +. Connections will be made between division, fractions and repeated -. Conceptual variation will be used through images, including arrays, to represent multiplication and division problems.
Developing Reasoning	I have ( ) groups of ( ) objects so altogether I have ( ) objects. I shared ( ) between people ( ) and they have ( ) each.	I have ( ) groups of ( ) objects so altogether I have ( ) objects. I shared ( ) between people ( ) and they have ( ) each. I checked by…….	( ) divided by ( ) is ( ). ( ) times by ( ) is ( ). This is the same because…. This is different because….. I already know that…..so… I know my answer is reasonable because….

		I agree with….beacuse….	I checked by….. I agree with…….because… If…then…..
Key people and 'real-life' links	More efficient counting methods, shopping for multiple packs, telling the time (counting in 5's), solving 'real-life' problems, chefs, astronaut, planners and buyers,		
IMPACT	Children will begin to have a good understanding of the concepts of multiplication and division. They will begin to know some multiplication facts and the related division facts. Multiplying by 2 will be linked to doubling, multiplying by 10 will be linked to place value and multiplying by 5 will be linked to counting around the clock. Conceptual variation will be used to link pictorial images, including arrays, to concrete and abstract representations of multiplication and division calculations. All skills in calculating will be applied to a range of routine and non-routine problem solving activities to ensure that children are able to apply their mathematics.		

	EYFS	**YEAR 1**	**YEAR 2**
NUMBER FRACTIONS: **IMPLEMENTATION**	The links between concrete, abstract and pictorial representations are planned for at all times. Conceptual variation will continuously be used to make the link between the abstract written form of a fraction and concrete and pictorial representations. Cubes, pizza fractions, fraction tiles and objects will be used to represent the concept of a fraction in a concrete form, alongside pictorial images, including shapes, and the abstract written form.		
	Children will practically explore doubling, halving and sharing through 'real-life' scenarios, such as laying a table, giving out sweets, serving food, shopping and toys. These will lead to solving simple practical problems	Children will be introduced to the concepts of finding and recognising halves and quarters of objects, shapes and quantities. Practical work will include fractions of measures. They will recognise and read the abstract written representations of ½ and ¼ and, through practical exploration, will gain an understanding that all parts of a fraction are equal. Halving will be explicitly linked to dividing by 2. Simple problem solving will reinforce fraction concepts.	Children will gain confidence in the concept of finding and recognising an increasing range of fractions of objects, shapes and quantities. This will include the additional unit faction of 1/3 as well as the non-unit fractions of 2/4 and ¾. This will also include recognising the equivalence of 2/4 and ½. Practical fraction work will link to finding fractions of measures and to solving 'real-life' problems. Explicit links will be made between finding ½ and 1/3 to counting in 2's and 3's and 'How many are in…?' and to the multiplication tables.
Developing Reasoning	Half of ( ) is ( ). Double ( ) is ( ).	Half of ( ) is ( ). A quarter of ( ) is ( ).	Half of ( ) is ( ). A quarter of ( ) is ( ). Two quarters of ( ) is ( ). Three quarters of ( ) is ( ). A third of ( ) is ( ).

	When I share ( ) objects between ( ) people they get ( ) each.	When I share ( ) objects between ( ) people they get ( ) each. If…. then…… I checked by….. I noticed that…..	If…. then…… I know the answer is reasonable because…. I checked by….. I noticed that…..
Key people and 'real-life' links	Building/construction, hairdressing, cooking, chef, shop keeper, green grocer, teacher, doctor/nurse, vet, architects, doctor/nurses, pharmacists, scientists		
IMPACT	Children will have an understanding of what a fraction is and be able to recognise and find a fraction of an object, shape or quantity, including finding fractions of measures. Links will be made to practical scenarios where we use fractions, with a heavy emphasis on the fact that a fraction is an equal part of a whole. Children will begin to understand that a fraction is a number and that we can count in fractions (½ , 1, 1 ½ , 2, 2 ½ , 3….etc) and that fractions can add up to more than one.		

	EYFS	**YEAR 1**	**YEAR 2**
MEASUREMENT: IMPLEMENTATION	The links between concrete, abstract and pictorial representations are planned for at all times. Work is primarily practical based, with an emphasis on the accurate use of appropriate vocabulary to describe and compare different measures. The reading of different labelled scales is introduced in KS1, linking to counting in 2's, 5's and 10's. Solving practical problems, including using balance scales, rulers, tape measures and a range of different containers, ensure that the children experience measures in a range of 'real-life' situations and contexts.		
	Children will use balance scales, water trays and various containers to practically explore length, weight and capacity, solving simple problems and leading to being able to compare two items. Non-standard units of measure may be used to compare items. They will use everyday language related to time, looking daily at the day, month, date and season to gain an understanding	Children will begin to explore further the concepts of length, weight and capacity, beginning to distinguish the invisible concepts of weight and capacity from the size of an object. Comparisons between more than 2 items will be made, including using non-standard units and the introduction of the need for some standard units of measure. Children will solve practical problems linked to measures and accurately use the associated vocabulary. They will begin to be able to compare times using appropriate vocabulary, and will begin to be able to read the time on	Children will be able to distinguish between appropriate standard measures needed for measuring length, weight, capacity and temperature. They will be able to measure to the nearest appropriate unit and record their results, sometimes using the < > and = signs. They will read a variety of scale to the nearest labelled division, employing their skills of counting in two's, fives and tens to help them. Children will be able to read the time to the nearest 15 minutes on an analogue clock, linking the fractions half and a quarter to turns on the clock. They will be able to solve simple

	of the passing of time. Short periods of time will be measured simply using sand timers and 'number of sleeps'.	an analogue clock to the hour and half past. Half past times will be linked to half as a fraction.	problems in the context of a range of measures, using vocabulary appropriately.
Developing Reasoning	The ( ) is longer/ shorter than the ( ). The ( ) is heavier /lighter than the ( ). The ( ) is ( ) cubes long. The ( ) is as heavy as ( ) cubes.	The ( ) is longer/ shorter than the ( ). The ( ) is heavier /lighter than the ( ). I checked by……. This is the same because….. This is different because……	This is the same because….. This is different because…… If…then…. I checked by…. I already know that…..
Key people and 'real-life' links	Cooking, green grocer, chef, building/construction, architect, designer, tailor/seamstress, sports referee, teacher, doctor/nurse, vet, scientists, manufacturers, inventors, quality control, train driver/ driver, pilot, safety officer, premises manager, astronaut		
IMPACT:	Children will understand that there are a range of measures and that we use different units for different measures. Links to practical problems, including cooking, will ensure that the children see the purpose of using standard measuring units.		

	EYFS	YEAR 1	YEAR 2
GEOMETRY – SHAPE: IMPLEMENTATION	Conceptual variation will continuously be planned for to connect shape names to pictorial images and concrete shapes and everyday objects. The specific vocabulary associated with 2D and 3D shapes will be taught through practical tasks and a 'hands on' approach to identification on shapes and everyday objects.		
	Children will begin to use the vocabulary associated with 'flat' 2D shapes and 'solid' 3D shapes through their play based learning. They will build up a range of shape names that they know and be able to recognise them and be able to name them in different contexts.	Children will further explore recognising and naming a range of 2D shapes to include squares, rectangles, triangles and circles. The range of 3D shapes they will be able to recognise and name will include cubes, cuboids, pyramids and spheres. We would expect them to begin to use vocabulary such as sides, corners and faces to describe some properties of 2D and 3D shapes. Conceptual variation will be used by ensuring that all shapes are presented in a range of	Vocabulary such as sides, corners, edges, vertices and faces will be introduced so that the children can talk about the properties of 2D and 3D shapes accurately. The should be able to identify a line of vertical symmetry in a 2D shape and this concept will be explored through practical work. Children should move onto spotting 2D shapes on the faces of 3D shapes and be able to compare and sort 2D and 3D shapes using appropriate vocabulary. Continued use of conceptual variation will reinforce the children's understanding of each shape (What is

		orientations, sizes and images so that children recognise shapes in different contexts. Simple problem solving tasks will focus on the properties of shapes.	a circle?) and the properties that must remain in place. Solving problems will focus on reinforcing the properties of 2D and 3D shapes.
Developing Reasoning	This shape looks like a ( ). This shape is called a ( ).	This shape is called a ( ). The ( ) has ( ) sides and ( ) corners. The ( ) has ( ) faces. It must be because…… It can't be because….. It is the same because…. It is different because……	The ( ) has ( ) sides and ( ) corners. The ( ) has ( ) faces. The ( ) has ( ) vertices. The ( ) has ( ) edges. The faces on the ( ) are ( ) shaped. It must be because…… It can't be because….. It is the same because…. It is different because…… I already know that…… so….. If…then….. I noticed that…..
Key people and 'real-life' links	Architects, designers, builder/construction worker, teacher, carpenters, game designer/programmer, artists,		
IMPACT	Children will be able to name, recognise and identify the properties of a range of 2D and 3D shapes. Through careful use of conceptual variation, they will understand that the properties of a shape are the key to their identification, not their size or orientation. Children will be able to connect the knowledge that they know about physical shapes within the learning environment to everyday objects, and sort shapes by their different attributes.		

	EYFS	YEAR 1	YEAR 2
GEOMETRY – POSITION AND DIRECTION:	Work is primarily practical based, with an emphasis on the accurate use of appropriate vocabulary to describe and compare positions, directions and movements. Links will be made to movement in dance and gymnastics, as well as the hands on a clock and fraction work. Pattern is the basis of our number system, therefor being able to recognise and recreate patterns is essential to our mathematical learning. Simple repeating patterns will be introduced in Early Years and then developed throughout KS1. Explicit links will be made to pattern in the natural world, in the number system and in the environment around us.		

IMPLEMENTATION	Children will use everyday language to describe the position of objects, including words such as 'behind', 'next to', 'under', 'above' and 'in front'. Children will begin to create repeating patterns, firstly with two repeating objects and then perhaps three. Where these patterns are made with shapes, they will make links with their shape knowledge to describe the repeating patterns in simple terms.	Children will use appropriate language to describe position, direction and movement, including whole, half and quarter turns. Links will explicitly be made to their fraction knowledge and to the movement of hands on a clock when telling the time. They will recognise and create repeating patterns with objects and shapes, being able to describe their patterns and continue them. Some patterns that they use will involve numbers. Children will identify patterns in the real world, both natural and man-made.	Children will use mathematical vocabulary to describe position, direction and movement, including whole, half, quarter and three-quarter turns introducing the vocabulary of clockwise and anti-clockwise. Explicit links will be made to fraction work and telling the time. Movement will also be looked at in terms of right angle turns and movement along a straight line. Pattern work will involve an increasing number of objects, including using images of objects that have been rotated to create patterns. Children will identify patterns in the real world, both natural and man-made.
Developing Reasoning	The object is ( ) the ( ). The pattern is ( ) then ( ).	The object is ( ) the ( ). The pattern is ( ) then ( ). When it turns a ( ) turn it will be facing ( ). It must be because… It can't be because….	It must be because… It can't be because…. It is the same because…. It is different because…… I noticed that…. I agree with…because….
Key people and 'real-life' links	Engineer, architect, plumber, designer, teacher, police, detective, sport/athlete, gymnast, pilot, train driver, sailor/captain, game designer/programmer, safety officer, premises manager, astronaut		
IMPACT	Children will understand the vocabulary related to position, direction and movement and be able to recognise when this would be used in daily life. They are able to identify patterns and repeating patterns, both those they have created and those in the natural world around them. Patterns form part of our everyday life and recognising these helps children to understand the world around them.		

STATISTICS:	**EYFS**	**YEAR 1**	**YEAR 2**
	Strong links between pictorial representations to concrete and abstract representations will be used to reinforce the concept of data analysis, graphs and tally charts. Children will explore the significance of being able to solve simple problems by asking questions and recording responses in different ways, and how data can be represented in different ways to illustrate the answers to those questions.		

IMPLEMENTATION	Whole class work may focus on grouping objects and items, looking for similarities between them. Using physical objects to create class/group pictograms will be an introduction into statistics.	Children will recognise that they can ask and answer questions to solve problems by grouping things and then counting the number of objects in each category. They will use this in practical situations within the classroom and be able to compare the categorical data that they have found. Children will be shown how to create simple pictograms and block graphs and explore vocabulary such as 'most popular' and 'least popular' to compare the results.	Children will solve real-life problems by gathering data to ask and answer questions and, by practically grouping things, see how we can transpose this information into tally charts and simple pictograms and block graphs. They will use vocabulary such as 'most popular', 'least popular' and 'how many more…?' to compare statistical data in a range of contexts. Children will be introduced to the concept of using a table to collate and represent data and the links between this abstract concept and the pictorial image of a graph or pictogram.
Developing Reasoning	The most popular one is ( ). The least popular one is ( ).	The most popular one is ( ). The least popular one is ( ). This is the same because…. This is different because….. I noticed that….	The most popular one is ( ). The least popular one is ( ). There are ( ) more ( ) than ( ). This is the same because…. This is different because….. I noticed that…..
Key people and 'real-life' links	Scientists, accountants, teachers, vets, architects, promotional marketer, sales director, product designer, merchandising manager, shop manager, planners and buyers, forecasters		
IMPACT	Children will understand that there are situations when asking and answering questions can help us to solve problems. They will see that there are a variety of ways in which statistical data can be represented and begin to see that some are quicker, more efficient and more appropriate than others.		