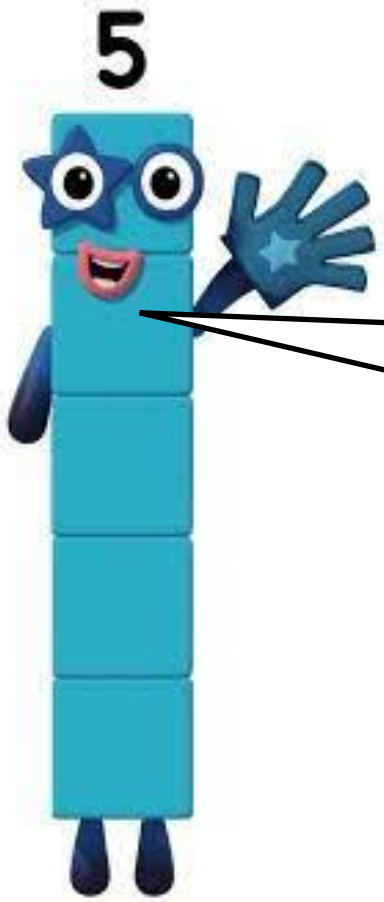
Mathematics in the Early Years

What does a Mathematician look like in the EYFS?



I want to become a **Master Mathematician** who can count confidently and develop a deep understanding of numbers, the relationships between them and the patterns within them.

What Mathematics looks like in the EYFS

Characteristics of Effective Learning: Playing and exploring – children investigate and experience things and have a go; Active learning – children concentrate and keep trying if they encounter difficulties and enjoy achievements; Creating and thinking critically – children have and develop their own ideas, make links between ideas, and develop strategies for doing things. In addition, the prime area of learning PSED, CL and PD underpin and are an integral part of all areas of learning.

Maths Educational Programme:

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.

Intent: We want children to enjoy mathematics, seeing it as fun, relevant and helpful to all aspects of their daily lives.

Learning Overview	We use Maths Mastery (NCTEM) for number. We believe the concept of number to be extremely important and believe children should develop a deep knowledge of lower numbers before moving on to higher numbers. We focus upon the concept of broadening children's knowledge and understanding of numbers e.g. the oneness of one etc. We use our Topical themes to provide opportunities in Shape, Space and Measure. Children learn through games and tasks using concrete manipulatives which are then rehearsed and applied to their own learning during exploration. We teach maths in a practical and kinaesthetic way, which supports our children to become logical problem solvers that can demonstrate good reasoning skills. We use maths enhancement activities in the different areas of the classroom, including the outdoors. This approach means that most children have a secure understanding of number, shape, space and measure. Children who need extra support with mathematics are initially targeted in the provision by key members of staff but take part in small group intervention towards the end of each term, if they are still identified as a concern.

Term	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Our Curriculum Goal	***Early Mathematical Experiences*** Counting rhymes and songs. ***Subitise*** *Subitise within 3. Create their own patterns for numbers within 4. Use fingers to represent quantities which they can subitise.* ***Cardinality, ordinality and counting*** *Relate the counting sequence to cardinality, seeing that the last number spoken gives the number in the entire set. Develop an understanding that anything can be counted, including actions and sounds.* ***Composition*** *See that all numbers can be made of 1s. Compose their own collections within 4.* ***Comparison*** *Use the language of comparison, including 'more than' and 'fewer than'. Compare sets 'just by looking'*	***Subitise*** Subitise within 5. ***Cardinality, ordinality and counting*** continue to develop their counting skills. Explore the cardinality of 5, linking this to dice patterns and 5 fingers on 1 hand. Begin to count beyond 5. Begin to recognise numerals, relating these to quantities they can subitise and count. ***Composition*** Explore the concept of 'wholes' and 'parts' by looking at a range of objects that are composed of parts, some of which can be taken apart and some of which cannot. Explore the composition of numbers within 5. ***Comparison*** Compare sets using a variety of strategies, including 'just by looking', by subitising and by matching. Compare sets by matching,	***Subitise*** Explore patterns within 5, including structured/ random arrangements. Explore patterns made by some numbers greater than 5, including structured patterns in which 5 is a clear part. Experience patterns which show a small group and '1 more' Match arrangements to finger patterns. ***Cardinality, ordinality and counting*** Develop verbal counting to 20 and beyond. Continue to develop object counting skills, Continue to link counting to cardinality, using their fingers to represent quantities between 5 and 10. Order numbers, linking cardinal and ordinal	***Subitise*** Explore symmetrical patterns, in which each side is a familiar pattern, linking this to 'doubles'. ***Cardinality, ordinality and counting*** Continue to consolidate their understanding of cardinality, working with larger numbers within 10. Become more familiar with the counting pattern beyond 20. ***Composition*** Explore the composition of odd and even numbers, looking at the 'shape' of these numbers. Begin to link even numbers to doubles Begin to explore the composition of numbers within 10. ***Comparison*** Compare numbers, reasoning about	***Subitise*** Continue to practise increasingly familiar subitising arrangements, including those which expose '1 more' or 'doubles' patterns. Use subitising skills to identify when patterns show the same number but in a different arrangement, or when patterns are similar but have a different number. Subitise structured and unstructured patterns, including those which show numbers within 10, in relation to 5 and 10. Identify when it is appropriate to count and when groups can be subitised. ***Cardinality, ordinality and counting*** Continue to develop verbal counting to 20 and beyond, including counting from different starting numbers. Continue to develop	***Subitise*** Continue to practise increasingly familiar subitising arrangements, including those which expose '1 more' or 'doubles' patterns. ***Cardinality, ordinality and counting*** Continue to develop verbal counting to 20 and beyond ***Composition*** Continue to explore the composition of 10. Show that some numbers to 10 can be split into 2 equal parts. ***Comparison*** Comparing groups of the same object with a big difference in number, and then a small difference. Comparing by looking, then by matching 1-to-1. Understanding when groups have an equal amount. Comparing groups of objects

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	Shape Describe 2D shapes **Measures** Estimate, order compare, discuss and explore capacity, **Positional Language** *Describe position accurately*	seeing that when every object in a set can be matched to one in the other set, they contain the same number and are equal amounts. ***Size*** *compare and order size* **Shape and pattern** Describe and sort 2D/3D shapes Recognise and create patterns	representations of number. ***Composition*** Explore the concept of 'wholes' and 'parts' by looking at a range of objects that are composed of parts, some of which can be taken apart and some of which cannot. Explore the composition of numbers within 5. ***Comparison*** Continue to compare sets using the language of comparison, and play games which involve comparing sets. Continue to compare sets by matching, identifying when sets are equal. Explore ways of making unequal sets equal. **Measures** Compare size. Estimate, compare and order lengths **Positional Language** Describe position accurately	which is more, using both an understanding of the 'howmanyness' of a number, and its position in the number system. ***Size*** *compare and order size* **Shape and pattern** Describe and sort 2D/3D shapes **Positional Language** *Describe position accurately*	confidence and accuracy in both verbal and object counting. ***Composition*** Explore the composition of 10. **Comparison** Order sets of objects, linking this to their understanding of the ordinal number system. **Measures** *Describe capacities* *Describe size*	that are of different sizes, colours or attributes. Beginning to generalise about '1 more/1 less' within 10 developing a sense of magnitude, e.g. knowing that 8 is a lot more than 2, but that 4 is only a little bit more than 2. **Positional language** Describe position accurately. Days of the week **Measures** *Describe capacities* *Compare volumes* *Compare weights* *Estimate, compare and order lengths.* **Shape and pattern** Recognise and create symmetrical patterns.
Our Curriculum Goal	To become a Master Mathematician who can count confidently and develop a deep understanding of numbers, the relationships between them and the patterns within them.					
ELG **(End of the year only)**	**By the end of EYFS pupils will:** • Count reliably with numbers from 1 to 20, place them in order and say which number is one more or one less than a given number. • Using quantities and objects, they add and subtract two single-digit numbers and count on or back to find the answer. • They solve problems, including doubling, halving and sharing. • Use everyday language to talk about size, weight, capacity, position, distance, time and money to compare quantities and objects and to solve problems. • Recognise, create and describe patterns. • Explore characteristics of everyday objects and shapes and use mathematical language to describe them					
During KS1, children will learn	**By the end of KS1 pupils will:** • Develop confidence and mental fluency with whole numbers, counting and place value. • Use numerals, words and the four operations, including with practical resources. • Recognise, describe, draw, compare and sort different shapes and use the related vocabulary. • Use a range of measures to describe and compare different quantities such as length, mass, capacity/volume, time and money. • Know the number bonds to 20 and be precise in using and understanding place value. An emphasis on practice at this early stage will aid fluency. • Read and spell mathematical vocabulary, at a level consistent with their increasing word reading and spelling knowledge at key stage 1					

Continuous Provision

Our 'CHILD LED' Maths journey through the year

Through our continuous provision, children have the opportunity to explore and use a variety of resources that enable them to develop their mathematical skills. Our provision includes: Number and shape puzzles, number and shape games, Numicon, Loose parts (compare bears, animals, transport, dinosaurs, pebbles, gems, counters, eggs, minibeasts), dice, dominoes, rulers, clocks, weighing scales, stacking cups, sand, playdough, shape sorters, 2D shapes, 3D shapes, pattern blocks, abacus, number lines, magnetic numbers, tap-a-shape, peg boards, counting rhymes, B-Bot, I-Pads.

Communication and Language (Prime Area)		
0/3	3/4	R
	Use a wider range of vocabulary.	Learn new vocabulary.
Generally focus on an activity of their own choice.	Understand 'why' questions, like: "Why has it got four sides"?	Articulate their thoughts and ideas in well-formed sentences.
Recognise and point to objects if asked about them.	Use talk to organise themselves and their play: "I'm going to do this puzzle first".	Use new vocabulary in different contexts.
Ask simple question about 'who', 'what' and 'where'.		Listen to and talk about selected non-fiction to develop a deep familiarity and new knowledge and vocabulary.
		Use talk to help work out problems and organise thinking and activities, and to explain how things work and why they might happen.
		Describe events in some details

Physical Development (Prime Area)		
0/3	3/4	R
Build independently with a range of appropriate resources. (natural blocks, magnetic blocks)	Choose the right resources to carry out their own plan.	Develop their small motor skills so that they can use a range of tools competently, safely and confidently. Suggested tools: rulers tap-a-shape hammer
Use large and small motor skills to do things independently. (pour sand/water)	Match their developing physical skills to tasks and activities. (pour sand/water)	Confidently and safely use a range of large and small apparatus, indoors and outdoors, alone and in a group. (cardboard boxes)
Fit themselves into spaces (tunnels, dens, boxes)	Choose the right resources to carry out their own plan.	
	Collaborate with others to move large items e.g. large box	

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Personal, Social, Emotional Development (Prime Area)		
0/3	3/4	R
Notice and ask questions about differences.	Select and use activities and resources, with help when needed. This helps them to achieve a goal they have chosen, or one which is suggested to them.	Show resilience and perseverance in the face of challenge.

Mathematics (Specific Area)		
0/3	3/4	R
Combine objects like stacking blocks and cups.	Develop fast recognition of up to 3 objects, without having to count them individually ('subitising'). • Recite numbers past 5. • 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. • Link numerals and amounts: for example, showing the right number of objects to match the numeral, up to 5.	Count objects, actions and sounds.
Take part in finger rhymes with numbers	Experiment with their own symbols and marks as well as numerals. Solve real world mathematical problems with numbers up to 5. Compare quantities using language: 'more than', 'fewer than'.	Subitise.
React to changes of amount up to three items	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'.	Link the number symbol (numeral) with its cardinal number value.
Develop counting like behaviour e.g. pointing or saying numbers in sequence	Understand position through words alone – for example, "The bag is under the table," – with no pointing.	Count beyond ten.
Counting everyday contexts, sometimes skipping numbers	Describe a familiar route. Discuss routes and locations, using words like 'in front of' and 'behind'.	Compare numbers.
Climb and squeeze themselves in different types of spaces	Make comparisons between objects relating to size, length, weight and capacity.	Understand the 'one more than/one less than' relationship between consecutive numbers.
Build with a range of resources	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.	Explore the composition of numbers to 10.
Complete inset puzzles	Talk about and identifies 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. 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...'	Automatically recall number bonds for numbers 0-5 and some to 10 Select, rotate and manipulate shapes to develop spatial reasoning skills. Compose and decompose shapes so that children recognise a shape can have other shapes *within it*, just as numbers can.

Compare sizes, weights etc using gestures and language		Continue, copy and create repeating patterns.
Notice patterns and arrange things in patterns		Compare length, weight and capacity.

Knowledge of The World (**Specific Area**)		
0/3	3/4	R
Explore materials with different properties.	Use all their senses in hands-on exploration of natural materials.	Explore the natural world around them.
Explore natural material, indoors and out.	Explore collections of materials with similar and/or different properties.	Describe what they see, hear and feel whilst outside
	Talk about what they see, using a wide vocabulary.	Understand the effect of changing seasons on the natural world around them. (collecting natural materials, time)
	Explore how things work	
	Explore and talk about different forces they can feel.	Draw information from a simple map
	Talk about the differences between materials and changes they notice.	

Literacy (**Specific Area**)		
0/3	3/4	R
•Enjoy songs and rhymes, tuning in and paying attention. •Join in with songs and rhymes, copying sounds, rhythms, tunes and tempo. •Say some of the words in songs and rhymes. •Copy finger movements and other gestures. •Sing songs and say rhymes independently, for example, singing whilst playing.		
Notice some print, such as the first letter of their name, a bus or door number, or a familiar logo.		

Expressive Arts and Design (**Specific Area**)		
0/3	3/4	R
Start to make marks intentionally	Make imaginative and complex 'small worlds' with blocks and construction kits, such as a city with different buildings and a park.	
Explore different materials using all of their senses	Create closed shapes with continuous lines, and begin to use these shapes to represent objects. • Draw with increasing complexity and detail, such as representing a face with a circle and including details	

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