Early Maths

The educational programme for Maths in the **Early Years Foundation Stage Statutory Framework (2021)** says:

"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 relationship 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 peers about what they notice and not be afraid to make mistakes."

The key mathematical skills and knowledge that our curriculum covers are:

Cardinality and counting

The cardinal value of a number refers to the quantity of things it represents, e.g. the 'three-ness' of three. When children understand the cardinality of numbers, they know what the numbers mean in terms of knowing how many things they refer to. Counting is one way of establishing how many things are in a group, because the last number you say tells you how many there are. Subitising is another way of recognising how many there are, without counting.

- Counting: saying number words in sequence
- Counting: tagging each object with one number word
- Counting: knowing the last number counted gives the total so far
- Subitising: recognising small quantities without needing to count them all
- Numeral meanings - matching a number symbol with a number of objects
- Conservation: knowing that the number does not change if things are rearranged

Comparison

Comparing numbers involves knowing which numbers are worth more or less than each other:

- More than / less than
- Identifying groups with the same number of things
- Knowing the 'one more than/one less than' relationship between counting numbers

Composition

Knowing numbers are made up of two or more other smaller numbers involves 'part–whole' understanding. Learning to 'see' a whole number and its parts at the same time is a key development in children's number understanding. Partitioning numbers into other numbers and putting them back together again underpins understanding of addition and subtraction as inverse operations:

- Part–whole: identifying smaller numbers within a number
- Partitioning a number of things into two groups, and recognising that those groups can be recombined to make the same total
- Understanding that a number can be partitioned into different pairs of numbers; a number can be partitioned into more than two numbers

Pattern

Developing an awareness of pattern helps young children to notice and understand mathematical relationships. The focus is on repeating patterns, progressing from children copying simple alternating AB patterns to identifying different structures such as ABB or ABBC. Patterns can be made with objects like coloured cubes, small toys, buttons and keys, and with outdoor materials like pinecones, leaves or large blocks, as well as with movements and sounds, linking with music, dance, phonics and rhymes. Children can also spot and create patterns in a range of other contexts, such as printed patterns, timetables, numbers and stories.

Shape, space and measures

- Showing an interest in shape and space by playing with shapes or making arrangements with objects.
- Showing awareness of similarities of shapes in the environment.
- Using positional language.
- Using shapes appropriately for tasks eg by sustained construction activity.
- Beginning to talk about the shapes of everyday objects
- Recognising and creates simple patterns

Core number songs and rhymes 1,2,3,4,5 5 little speckled frogs 5 little ducks 5 little monkeys Alice the camel 5 little men in a flying saucer 5 sleepy fingers (part-whole)	**Core number games** Dice games Hopscotch Snakes and ladders Dominoes

Number and numerical patterns	Term 1	Term 2	Term 3	Term 4	Term 5	Term 6
Throughout the year: Core songs and nursery rhymes include those with a focus on number (eg 5 little ducks). Adults will model mathematic language as they interact with children during their self-initiated play. Mathematical language and images are displayed in the inside and outside learning environments.	Counting songs and rhymes - beginning to say/sing numbers to 5 in order. Exploring arrangement of objects eg pebbles, leaves, buttons, pinecones Counting things that can't be moved eg steps & jumps (Bear Hunt), claps. Visual representations of numbers up to 3 - subitising (recognising objects without counting) up to 3 The order of numbers to 0-3 - counting aloud, counting on fingers,	Counting songs and rhymes - beginning to say/sing numbers to 5 in order. Saying the counting sequence going to higher numbers, forwards and backwards eg countdown Using numbers in play e.g. phone numbers, counting friends, setting the table, number plates on bikes. Counting objects - tagging each object with one number word. Comparing quantities – more, lots, less, same.	Counting songs and rhymes - say/sing numbers to 5 in order, forwards and backwards. Counting objects to 5 - tagging each object with one number word, introducing matching numerals. Counting things that can't be seen, such as sounds, actions, words and things that can't be moved eg birds in a picture Introducing numerical mark-making – making their own marks and explaining the	Counting songs and rhymes - say/sing numbers to 5 in order, forwards and backwards. Making predictions about what the outcome will be in stories, rhymes and songs if one is added to, or if one is taken away. Exploring different ways of showing amounts eg with fingers, collections of objects, arranging objects to 5 in different ways. Understanding that the last number counted gives the total eg dice games to collect the	Counting songs and rhymes - say/sing numbers to 5 in order, forwards and backwards. Number talks – seeing small numbers within a larger collection eg giant ladybirds: 'There are 5 spots altogether. I can see 4 and 1, I can see 3 and 2, and I can see 1 and 1 and 1 and 1 and 1.' Splitting a number of things into two groups, recognising that those groups can be recombined to make the same total eg skittles (how many fell down/still standing? Do we still have 5?)	Counting songs and rhymes - say/sing numbers to 5 in order, forwards and backwards. Splitting a number of things into two groups, recognising that those groups can be recombined to make the same total eg skittles (how many fell down/still standing? Do we still have 5?) Using numbers to solve problems as they play and explore. Encouraging children to talk about their mathematical thinking

	counting objects (tagging each object with one number word)	Counting objects of different sizes so that children focus on numerosity.	mathematical meaning of them	corresponding number of things.	Recognising that if they add one, they will get the next number, or if one is taken away, they will have the previous number. eg 'There are 4 frogs on the log, 1 frog jumps off. How many will be left?	

Shape, space and measures	Term 1	Term 2	Term 3	Term 4	Term 5	Term 6
Throughout the year: Adults will model mathematic language as they interact with children during their self-initiated play. Mathematical language and images are displayed in the inside and outside learning environments. Resources inside and outdoors will provide children with opportunities to	Exploring and using shapes in construction play. Selecting shapes appropriately: flat surfaces for building, a triangular prism for a roof etc. When playing, combining shapes to make new ones – 2 squares to make a rectangle, square and triangle to make a house. Exploring size, capacity in sand/water play – full, empty	Simple construction showing some awareness of the properties of shapes in play eg stacking blocks Insert boards, shape sorters and jigsaws - noticing the results of rotating and reflecting images Making patterns with shapes Making a complete circuit with a train track Choosing shapes appropriately: flat surfaces for building	Making pictures and meaningful patterns with shapes Using forward and backwards buttons to move a beebot or remote-control vehicle Hunting for hidden objects, with some prompts, e.g. 'Look behind the bike store, take three steps from the front of the paint trolley…' Talking about and identify the patterns around them. For example: stripes on clothes, designs on rugs	Measuring ingredients for cooking using eg cup, spoon Using forward and backwards buttons to move a beebot or remote-control vehicle Understanding and using positional language such as, in, under, behind, in front, beside, next to and use them in their play Discussing routes and locations, using words like 'in front of' and 'behind'.	Directing/narrating a route for riding a tricycle/bike Directing a simple robot or remote-control toy vehicle along a route Directing other children to find hidden objects, e.g. 'Look behind the lego box, take five steps from the front of the book case…' Being able to say which is "heavy" and which is "light" when given two items, and say which is 'full' and 'empty' when filling containers	Directing a simple robot or remote-control toy vehicle along a route Following a sequence of directional instructions eg obstacle course 'go over the bench then through the tunnel Making comparisons between objects relating to size, length, weight and capacity Talking about and exploring 2D and 3D shapes (for example, circles, rectangles, triangles and cuboids) using informal and mathematical language:

explore shape, space and measuring	Exploring size – large/big, middle-sized, small (link to 3 Bears) Riding tricycles around simple routes Completing simple inset jigsaws Joining train track pieces in a line	and stacking, curved surfaces for rolling, a triangular prism for a roof etc	and wallpaper. Use informal language like 'pointy', 'spotty', 'blobs' etc. Recognising and following patterns like stick, leaf, stick, leaf.	Talking about and exploring shapes (for example, circles, rectangles, triangles) using simple mathematical language: 'straight', 'flat', 'round'.	Creating their own repeating pattern eg blue, red, blue, red; shell, stick, shell, stick	'sides', 'corners'; 'straight', 'flat', 'round'.