Maths in Early Years

Main links to the seven areas of learning: Communication and Language and Mathematics

Mathematical Vocabulary	
Nursery: Communication and Language	* Use a wider range of vocabulary. * Understand 'why' questions, like: "why do you think the caterpillar is so fat?"
Reception: Communication and Language	* Learn new vocabulary. * Use new vocabulary throughout the day.
Communication and Language ELG	Speaking * Participate in small group, class and one-to-one discussions, offering their own ideas, using recently introduced vocabulary.

Number and Place Value: Counting	
Nursery: Mathematics	* Recite numbers past 5. * Say one number name 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').
Reception: Mathematics	* Count objects, actions and sounds * Count beyond ten
Mathematics ELG	Numerical Patterns * Verbally count beyond 20, recognising the pattern of the counting system.

Number and Place Value: Identifying, Representing and Estimating Numbers	
Nursery: Mathematics	* Develop fast recognition of up to 3 objects, without having to count them individually ('subitising'). * 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. * Experiment with their own symbols and marks as well as numerals.
Reception: Mathematics	* Subitise * Link the number symbol (numeral) with its cardinal number value.
Mathematics ELG	Number * • Subitise (recognising quantities without counting) up to 5

Number and Place Value: Reading and Writing Numbers	
Nursery: Mathematics	* Link numerals and amounts: for example, showing the right number of objects to match the numeral, up to 5. * Experiment with their own symbols and marks as well as numerals.
Reception: Mathematics	* Link the number symbol (numeral) with its cardinal number value.

Number and Place Value: Compare and Order Numbers	
Nursery: Mathematics	* Compare quantities using language: 'more than', 'fewer than'.

Reception: Mathematics	* Compare numbers
Mathematics ELG	Numerical Patterns * Compare quantities up to 10 in different contexts, recognising when one quantity is greater than, less than or the same as the other quantity.

Number and Place Value: Understanding Place Value	
Reception: Mathematics	* Understand the 'one more than/one less than' relationship between consecutive numbers. * Explore the composition of numbers to 10.
Mathematics ELG	Number * Have a deep understanding of numbers to 10, including the composition of each number

Number and Place Value: Solve Problems	
Nursery: Mathematics	* Solve real world mathematical problems with numbers up to 5.

Addition and Subtraction: Mental Calculations	
Reception: Mathematics	* • Automatically recall number bonds for numbers 0-5 and some to 10.
Mathematics ELG	Number * 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

Addition and Subtraction: Solve Problems	
Mathematics ELG	Numerical patterns * Explore and represent patterns within numbers up to 10, including evens and odds, double facts and how quantities can be distributed evenly.

Measurement: Describe, Measure, Compare and Solve (all strands)	
Nursery: Mathematics	* Make comparisons between objects relating to size, length, weight and capacity.
Reception: Mathematics	* Compare length, weight and capacity

Measurement: Telling the Time	
Nursery: Mathematics	* Begin to describe a sequence of events, real or fictional, using words, such as 'first', 'then…

Properties of Shapes: Recognise 2D and 3D Shapes and their Properties	
Nursery: Mathematics	* Talk about and explore 2D and 3D shapes (for example, circles, rectangles, triangles and cuboids) using informal and mathematical language: 'sides', 'corners', 'straight', 'flat', 'round'. * Select shapes appropriately: flat surfaces for a building, a triangular pattern for a roof, etc. * Combine shapes to make new ones – an arch, a bigger triangle, etc.

Reception: Mathematics	* Select, rotate and manipulate shapes in order to develop spatial reasoning skills.

Properties of Shape: Compare and Classify Shapes	
Reception: Mathematics	* Compose and decompose shapes so that children can recognise a shape can have other shapes within it, just as numbers can.

Position and Direction: Position, Direction and Movement	
Nursery: Mathematics	* Understand position through words alone – for example, "The bag is under the table," – with no pointing. * Describe a familiar route. * Discuss routes and locations, using words like 'in front of' and 'behind'.
Reception: Understanding the World	* Draw information from a simple map.

Position and Direction: Patterns	
Nursery: Mathematics	* 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. * Notice and correct an error in a repeating pattern.
Reception: Understanding the World	* Continue, copy and create repeating patterns.

Statistics: Record, Present and Interpret Data	
Nursery: Mathematics	* Experiment with their own symbols and marks, as well as numerals.

Maths: Year One	
Number – number and place value	Pupils should be taught to: * 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	Pupils should be taught to: * 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 = − 9

Number – multiplication and division	Pupils should be taught to: * 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
Number – fractions	Pupils should be taught to: * 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	Pupils should be taught to: * 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
Geometry – properties of shapes	Pupils should be taught to:

	* 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]
Geometry – position and direction	* Pupils should be taught to: * describe position, direction and movement, including whole, half, quarter and three quarter turns.

How can EYFS children learn about Maths?

* Sand and water play
* Building with blocks
* Sorting and categorising
* Exploring, noticing and making patterns
* Counting: rote, singing, 1:1
* Exploring shape and their properties
* Subitising groups of objects
* Counting/number songs and rhymes
* Sequencing time, routine and events, including events in their own life
* Experimenting with marks representing number and numerical amounts/pattern
* Comparing groups and amounts
*

Ideas to enhance the setting:

* Tens frames and five frames

* Number lines and rulers
* Plastic numbers, wooden numbers, sand numbers, number fans
* Natural objects such as sticks, stones, shells, corks
* Sorting objects ie compare bears, sorting dinosaurs etc
* Books with a mathematical theme
* Large scale equipment to be used in the garden
* Pictures and representations of patterns – objects to make repeating patterns
* Hoops and sorting hoops
* Numicon

Key questions to ask in Maths

* How do you know?
* Why do we have to say the numbers in the same order when we count?
* How many do you have?
* How do you know you have that number?
* How could you check your answer?
* How do you know you have counted every object?
* What number is 1 more than the number you are standing on?
* Which number is 1 less?
* What do you notice when you find 1 more?
* How do you know this is the number 5?
* How is it different to 3?

* What shape is your hat?
* How many pieces of wood do you need? Why?
* Can you see any other shapes now that you've added your line?
* How many corners, edges, etc?
* What would you do if I gave you another plank?
* What does estimating mean?
* Do you think there are more than 10 or less than 10?
* Can you guess/estimate how many balls there are?
* How can we find out how many balls there are altogether?
* What would be a sensible way to count the balls?

Key Vocabulary: Nursery	Number, same, different, count, number names (1-5), How many, next, after, before, count, order, altogether, more, one more, how many left, less, one less, pair, sharing, the same, half, circle, square, rectangle, triangle, semi-circle, cube, round, full, empty, half full/empty, heavier, light, long, short, tall, longest, shortest, tallest, pence, pounds, coins, money, soon, later, before, next, after, forwards, backwards, most, least
Key Vocabulary: Reception	Number, same, different, count, digit, order, equal, subitise, number names (0-10), how many, next, after, before, count, order, tens, ones, larger, smaller, largest, smallest, in between, on, back, forwards, backwards, altogether, more, one more, double, altogether, total, more, equals, plus, addition, add, question, answer, how many left, less, one, less, fewer, left, less, fewer, few, away, question, answer, take away, pair, lots of, sharing, the same, half, fair, side, corner, straight, curved, round, same, pentagon, sphere, cuboid, cone, cylinder, face, corner, edge, point, straight, curved, flat, 3D, same, different, liquid, pouring, heavier, lighter, heaviest, lightest, same, different, balanced, scales, compare, weigh, longer, shorter, taller, tape, compare,

	pay, sell, buy, change, morning, afternoon, night, on top, under, next to, behind, side of, in between, popular, difference, tally chart