Mathematics

Marsh Green Primary School

EYFS Mathematics Progression of Skills

	YE – Birth to 3 years	Nursery – Ages 3 to 4	Reception
Autumn	**Subitising** • Take part in finger rhymes with numbers. • React to changes of amount in a group of up to three items **Counting** • Combine objects like stacking blocks and cups. • Put objects inside others and take them out again • Count in everyday contexts, sometimes skipping numbers – '1-2-3-5'. **Comparison** • Compare amounts, saying 'lots', 'more' or 'same'. • Develop counting-like behaviour, such as making sounds, pointing or saying some numbers in sequence **Pattern** • A child at the earliest level does not recognize patterns. For example, a child may name a striped shirt with no repeating unit a "pattern."	**Subitising** • Can put out a matching group nonverbally but cannot necessarily give the number name telling how many. For example, when four objects are shown for only two seconds, then hidden, child makes a set of four objects to "match." • Can nonverbally make a small collection (no more than five, usually one to three) with the same number as another collection. For example, when shown a collection of three, makes another collection of three • Subitise to 3 – Instantly see how many • • Count how many - Begin to count objects using 1-1 correspondence. • • Make numbers to 5 - Start by showing 1, 2 and 3 using fingers. • • Add 1 more (through songs and rhymes) **Counting** • Verbally count to 10 with some correspondence with objects. They may point to objects to count a few items but then lose track. • Can keep one to-one correspondence between counting words and objects—at least for small groups of objects laid in a line. A corresponder may answer "how many" by recounting the objects starting over with one each time • Hear some number names	**Subitising** • Identify when a set can be subitised and when counting is needed • Subitise different arrangements, both unstructured and structured, including using the Hungarian number frame • Spot smaller numbers 'hiding' inside larger numbers • Use dot cards, dominoes and dice as part of a game, including irregularly arranged dots (e.g. stuck on) • Play hidden object games where objects are revealed for a few seconds; for example, small toys hidden under bowl – shuffle them, lift the bowl briefly and ask how many there were • Find 1 more - Continue to link to stories, songs and rhymes • Conceptually subitise to 5 - Notice the parts that make up the whole • Notice the composition of numbers within 10 - Link to stories, songs and rhymes • Combine 2 groups - 2 groups are combined to find the total. • Add more - A quantity is increased **Counting**

	Shape and Space • Describe children's climbing, tunnelling and hiding using spatial words like 'on top of', 'up', 'down' and 'through'. • Provide blocks and boxes to play freely with and build with, indoors and outside. • Provide inset puzzles and jigsaws at different levels of difficulty. **Measures** • Compare sizes, weights etc. using gesture and language - 'bigger/little/smaller', 'high/low', 'tall', 'heavy'.	• Model saying number names in order • Look for collections of large and small amounts • Join in stable order counting forwards • Join in saying some number names • Practise saying number names in order • Model saying 1, 2 and 3 in play • Copy fingers to represent 1, 2 and 3 • Look for collections of large and small amounts • Say number names in order • Copy the sequence of 1, 2 and • Begin to count actions **Comparison** • Can identify that different organizations of the same number of small groups are equal and different from other sets. (1–4 items). • Can match small, equal collections of dissimilar items, such as shells and dots, and show that they are the same number. • Collect objects to compare amounts • Look for collections of large and small amounts • Make large and small collections • Make simple comparisons of amounts • Compare and talk about large and small amounts **Pattern** • Can recognize a simple pattern. For example, a child at this level may say, "I'm wearing a pattern" about a shirt with black, white, black, white stripes.	• Connect quantities and numbers to finger patterns and explore different ways of representing numbers on their fingers • Focus on the 'five-ness of 5' using one hand and the die pattern for 5 • Develop counting skills and knowledge, including that the last number in the count tells us 'how many' (cardinality); to be accurate in counting, each thing must be counted once and once only and in any order. • The need for 1:1 correspondence; understanding that anything can be counted, including actions and sounds compare sets of objects by matching begin to develop the language of 'whole' when talking about objects which have parts • Count backwards, for example number rhymes • Practise object counting skills • Match numerals to quantities within 10 • Verbal counting beyond 20 • Count things of different sizes – this helps children to focus on the numerosity of the count • Play dice games to collect a number of things • Play track games and count along the track **Composition** • Explore how all numbers are made of 1s • Focus on composition of 3 and 4 • Explore the concept of 'whole' and 'part' • Focus on the composition of 3, 4 and 5

		• A sign of development is when the child fills in a missing element of a pattern. For example, given objects in a row with one missing, the child can identify and fill in the missing element • Listen to repeats in songs and stories • Start to join in with repeats from stories • Look for collections of large and small amounts • Make line patterns with own sequences • Start to join in songs with repeats • Clap along to songs • Join in with repeated actions in songs • Sing some refrains independently • Look for collections of large and small amounts • Say what happens next • Join in with repeats in songs and stories • Have a sense of daily routines **Shape and Space** • 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’. • Encourage children to play freely with blocks, shapes, shape puzzles and shape-sorters. • Sensitively support and discuss questions like: “What is the same and what is different?” • Encourage children to talk informally about shape properties using words like ‘sharp corner’, ‘pointy’ or ‘curvy’. Talk about shapes as you play with them: “We need a piece with a straight edge.	**Comparison** • Comparison of sets - ‘just by looking’ and then matching • Use the language of comparison: more than and fewer than, an equal number • Collect collections for children to sort and compare, which include objects which are identical, and which include objects of different kinds or sizes • Ask children to convert two unequal groups into two that have the same number, e.g. ‘There are 6 apples in one bag and 2 in another bag; can we make the bags equal for the two hungry horses?’ • Explain unfair sharing - 'This one has more because it has 5 and that one only has 3' • Compare numbers that are far apart, near to, and next to each other • Label groups with the correct numeral. Do children spot the error if a group is mislabelled? For example, 'The label on the pot says 4 and we have 5 – what do we need to do?’ A child may say, ‘We need to take one out because we have one too many.’ • Make predictions about what the outcome will be in stories, rhymes and songs if one is added to, or if one is taken away **Pattern** • Build towers or trains of different-coloured cubes (continuing patterns horizontally and vertically) • Extend patterns using a wide range of identical objects in different colours, e.g. beads; small plastic toys such as bears, dinosaurs, vehicles. Try to avoid interlocking

		<u>Measures</u> • Can identify length as an attribute. For example, they might say, “I’m tall, see?” • Can recognize and name prototypical circle, square, and, less often, a typical triangle. For example, the child names this a square. Some children may name different sizes, shapes, and orientations of rectangles, but also accept some shapes that look rectangular but are not rectangles. Children name these shapes “rectangles”	cubes or bead-threading so children can focus on the pattern rather than their coordination skills. • Access a range of patterns to copy. For example, using the plastic bears: big, small, big, small, big… footwear: shoe, welly, shoe, welly…, actions and sounds: jump, twirl, jump, twirl, jump… or clap, stamp, clap, stamp… • Collect things in the outdoors environment: leaf, stick, leaf, stick… • Challenge the child to change one element of the pattern they have created, e.g. ‘Can you change the red bear to a blue bear? What is the pattern now?’ • Ensure that there are numerous opportunities to create patterns – e.g. in the outdoors, using natural materials such as sticks, leaves, stones, pine cones; in craft activities, using stamping, sticking, printing; with musical instruments, using sounds such as drums, shakers, triangles, etc. • Work collaboratively with a friend to take turns to create a pattern, e.g. one claps, one stamps, or one gets the red bear, one gets the yellow bear, etc. • Challenge a friend to continue or copy their pattern. • Build towers or trains of different-coloured cubes (continuing patterns horizontally and vertically) • Extend patterns using a wide range of identical objects in different colours, e.g. beads; small plastic toys such as bears, dinosaurs and vehicles. Try to avoid using interlocking cubes or bead-threading, so children can focus on the pattern they

			are constructing rather than on their coordination skills. **<u>Shape and Space</u>** • Ride trikes around interesting routes • Print and make pictures and patterns with shapes • Posting boxes • Jigsaws • Make a complete circuit with a train track • Direct a simple robot or remote-controlled toy vehicle along a route • Tangrams: 'Can you make a person with the shapes?' • With toys in a line: 'Can you say what the teddy on the other side is seeing?' • Hunt for hidden objects, with some prompts, e.g. 'Look behind the bicycle store, take three steps from the front of the art cupboard...' • Develop and talk about small-world scenarios, e.g. doll's house, miniature village, play park • Act out their own versions of well-known stories where characters negotiate routes and obstacles, for example 'We're Going on a Bear Hunt' • Direct each other as robots. • Construct with structured and unstructured materials • Make dens with varied materials outdoors. **<u>Measures</u>** • Dough modelling, which can provide a good opportunity to discuss the length of snakes, or the weight of different-sized lumps

			• Water and sand-play, which can provide lots of opportunities to highlight capacity • Encourage children to compare different attributes in everyday situations: 'I wonder who has the longest snake?' 'I wonder whose pot will hold the most water?' 'I wonder which ball is the heaviest?' • Cut a piece of ribbon as long as a child's arm and encouraging them to find things in the environment that are longer, shorter or the same length • Focus on asking for specific things according to their attributes. For example: 'Please can you pass me a … that is … than this one?' • When comparing directly, finding the odd one out, by providing a varied range of container shapes all containing the same amount of liquid except for one. 'Which one do you think is the odd one out? Why? How will we check? Were we right?'
Spring	**Subitising** • Name groups of one to two, sometimes three. For example, when shown a pair of shoes, this young child says, "Two shoes." • Can put out a matching group nonverbally, but cannot necessarily give the number name telling how many. For example, when four objects are shown for only two seconds, then hidden, child makes a set of four objects to "match."	**Subitising** • 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. **Counting**	**Subitising** • Subitise within 5 focusing on dice patterns • Match numerals to quantities within 5 • Make different arrangements of numbers within 5 and talk about what they can see, to develop their conceptual subitising skills • 'all at once fingers' – show me four fingers. • Use numeral dice in games; matching numerals with varied groups of things • Encourage the children to make different patterns with a given number of things. **Counting** • Counting – focus on ordinality and the 'staircase' pattern

	Counting • May name some numbers meaninglessly. • May skip numbers and have no sequence • May sing-song numbers, but without meaning • Verbally counts with separate words, but not necessarily in the correct order • Can add and subtract very small collections nonverbally. For example, when shown two objects, then one object going under a napkin, the child identifi es or makes a set of three objects to "match." **Comparison** • Puts objects into one-to-one correspondence, but with only intuitive understanding of resulting equivalence. For example, a child may know that each carton has a straw, but doesn't necessarily know there are the same numbers of straws and cartons. • Compare collections that are quite different in size (for example, one is at least twice the other) and know that one has more than the other. If the collections are similar, the	• Make actions when saying counting words • Count out up to 3 objects from rhymes • Look for collections of large and small amounts • Label amounts as 1 and not • Move fingers when saying counting words • Notice number symbols as labels **Comparison** • Names attributes of objects and places objects together with a given attribute, but cannot then move to sorting by a new rule. For example, the child may say, "These are both red." **Pattern** • Explain simple pattern arrangements • Choose blocks to copy simple creations • Look for collections of large and small amounts • Make simple pattern arrangements • Make roads and bridges with intent • Make simple line patterns with objects **Shape and Space** • Respond to simple language of position • Select shapes for a space • Look for collections of large and small amounts	• See that each number is one more than the previous number • Focus on the 'staircase' pattern and ordering numbers • Hear and join in with the counting sequence, and connect this to the 'staircase' pattern of the counting numbers, seeing that each number is made of one more than the previous number **Composition** • Focus on 5, 6 and 7 as '5 and a bit' • Compare sets and use language of comparison: more than, fewer than, an equal number to • Make unequal sets equal • Encourage making arrangements with (e.g.) ten; ensuring the children talk about the different arrangements they can see within the whole. • Explore songs; for example, 'Five Currant Buns' – show that the whole is still five, but some are in the shop and some have been taken away; check throughout that there are still five currant buns • Play skittles and looking at how many are standing. How many have fallen over? How many are there altogether? • Numicon towers: layering up Numicon pieces of the same total • Put things into two containers in different ways • Make a number with two different kinds of things. For example, make a fruit skewer with five pieces of fruit, using bowls of bananas/strawberries to choose from; then ask the children to describe how they have

	child can compare very small collections. • Can identify the first and often second objects in a sequence. **Pattern** • Notice patterns and arrange things in patterns. • Provide patterned material – gingham, polka dots, stripes etc. – and small objects to arrange in patterns. Use words like 'repeated' and 'the same' over and over. **Shape and Space** • Use the language of size and weight in everyday contexts. • Provide objects with marked differences in size to play freely with. Suggestions: dolls' and adult chairs, tiny and big bears, shoes, cups and bowls, blocks and containers. **Comparison** • The first sign that a child can classify is when he or she recognizes, intuitively, two or more objects as "similar" in some way. For example, "that's another doggie."	• Explore and describe shapes and objects • Arrange blocks in a chosen position • Recognise when 2 objects are the same shape • Can decompose shapes, but only by trial and error. For example, given only a hexagon, the child can break it apart to make this simple picture by trial and error: • Can compare real world objects. For example, the child says two pictures of houses are the same or different • Explore and play with shapes • Put shapes and blocks into position • Look for collections of large and small amounts • Begin to explore and describe natural shapes and objects • Show interest in simple differences between shape • Select shapes for a reason • Explore shape resources • Talk about simple positions • Look for collections of large and small amounts • Move through positions • Explore more complex inset jigsaws • Move into simple positions • 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. **Measures**	made theirs. They should compare it with a partner's: 'What is the same about your skewers? What is different?' • Bunny Ears: using your fingers like bunny ears. 'With two hands, show me five fingers. Can you do it in a different way?' Or, 'Show five fingers altogether with a friend.' • Spill the Beans: using double-sided counters or beans, where one side is coloured, throw the collection and note how many of each type can be seen and how many altogether. • Use six bean bags with different fabric on each side, throw the collection and note how many of each type can be seen • Role play, e.g. in a toy shop, ten toys need arranging onto the three shelves. How will you organise them? • Have more than two places to sort things into in any given context, e.g. arranging characters in small-world play in different locations • Games such as 'Posh Ducks' (Griffiths, R., Back, J. & Gifford, S. (2016) Making Numbers: Using manipulatives to teach arithmetic, OUP): using a set number of ducks, for example ten in three different locations (nest, water, decking), roll the dice and make one group match the amount shown without adding or taking any away. **Comparison** • Focus on ordering of numbers to 8 • Use language of less than • Collections with a large number of things, and collections with a small number of things

		• Make comparisons between objects relating to size, length, weight and capacity. • Provide experiences of size changes. Suggestions: “Can you make a puddle larger?”, “When you squeeze a sponge, does it stay small?”, “What happens when you stretch dough, or elastic?” • Talk with children about their everyday ways of comparing size, length, weight and capacity. Model more specific techniques, such as lining up ends of lengths and straightening ribbons, discussing accuracy: “Is it exactly…?”	• Ensure that when providing groups to compare, there are some that have an equal amount • Ensure children focus on the numerosity of the group by having items in the collection of different kinds and sizes **<u>Pattern</u>** • Present patterns with deliberate errors, including extra, missing and swapped items, e.g. red cube, blue cube, red cube, blue cube, red cube, red cube, blue cube – identifying there is an extra item and fixing it by removing the extra red cube, putting in an extra blue cube, or swapping the final cubes • Ask the children to make a pattern with a deliberate mistake and challenging a friend to spot it. • Provide a range of patterns – physical and on cards – that children can continue • Ensure that the patterns offered have different structures and end after a complete or a partial unit • Utilise a range of items in the environment to create patterns such as interlocking cubes and toys, e.g. links, elephants, camels • Explore and creating patterns on peg boards, with fruit (e.g. fruit kebabs), musical instruments, movements and dance sequences • Present patterns with deliberate errors -once children have fixed the pattern, encouraging them to check the ‘fix’ by tracking the pattern **<u>Shape and Space</u>**

			• Design a plan for a garden or play area, using a small tray with sand, twigs, building bricks, etc • Draw or making a simple map of a route with 'landmarks', e.g. houses and trees • Follow a simple map of an excursion. • Use stories as a prompt for creating representations, e.g. building a house for the three bears • Make pictures with found materials, as well as structured shapes and blocks **Measures** • Posing see-saw problems, relating to weight: 'What can we do to make this side of the see-saw go down?' • Use a simple spring balance to compare the weight of cargo for a toy boat • Set up a 'balancing station' with interesting things to weigh and to balance, indoors and outdoors • Compare different parcels, ensuring some of the smaller parcels are heavy, and some of the larger parcels are light.
Summer	**Comparison** • Puts objects into one-to-one correspondence, but with only intuitive understanding of resulting equivalence. For example, a child may know that each carton has a straw, but doesn't necessarily know there are the same numbers of straws and cartons.	**Subitising** • Link the number symbol (numeral) with its cardinal number value. • Display numerals in order alongside dot quantities or tens frame arrangements. • Play card games such as snap or matching pairs with cards where some have numerals, and some have dot arrangements. • Discuss the different ways children might record quantities (for example, scores in	**Subitising** • Subitise to 5 • Introduce the rekenrek • Subitising – to 6, including in structured arrangements • Automatic recall of bonds to 5 **Counting** • Count – larger sets and things that cannot be seen

	• Compare collections that are quite different in size (for example, one is at least twice the other) and know that one has more than the other. If the collections are similar, the child can compare very small collections. • Can identify the first and often second objects in a sequence. • A sign of development is when a child places objects that are alike on some attribute together, but switches criteria and may use functional relationships are the basis for sorting. A child at this level might stack blocks of the same shape or put a cup with its saucer. **Shape and Space** • Can match basic shapes (circle, square, typical triangle) with the same size and orientation. • A sign of development is when a child can match basic shapes with different sizes. • The next sign of development is when a child can match basic shapes with different orientations. • Child can manipulate shapes as individuals, but is unable to combine them to compose a larger shape.	games), such as tallies, dots and using numeral cards. **Counting** • Count objects, actions and sounds. • Develop the key skills of counting objects including saying the numbers in order and matching one number name to each item. • Say how many there are after counting – for example, "...6, 7, 8. There are 8 balls" – to help children appreciate that the last number of the count indicates the total number of the group. This is the cardinal counting principle. • Say how many there might be before you count to give a purpose to counting: "I think there are about 8. Shall we count to see?" • Count out a smaller number from a larger group: "Give me seven..." • Knowing when to stop shows that children understand the cardinal principle. • Build counting into everyday routines such as register time, tidying up, lining up or counting out pieces of fruit at snack time. • Sing counting songs and number rhymes and read stories that involve counting. • Play games which involve counting. • Identify children who have had less prior experience of counting and provide additional opportunities for counting practice. **Composition** • Focus on composition of 2, 3, 4 and 5 before moving onto larger numbers • Provide a range of visual models of numbers: for example, six as double three on dice, or	• Count things that can't be seen, such as sounds, actions, words • Count things that cannot be moved, such as pictures on a screen, birds at the bird table, faces on a shape **Composition** • Composition – '5 and a bit' • Composition of numbers to 10 **Comparison** • Comparison – linked to ordinality • Play track games **Pattern** • Provide a range of experiences where children can create a pattern using a coding structure • Ensure children can follow the patterns they have coded • Make circular patterns such as necklaces, circles of linking elephants or camels • Use pre-given circles to create a border, such as on or around a paper plate • Explore which patterns work, which don't, and why • Offer a unit of the pattern and asking the child if they can include it in their pattern • Make patterns around rectangular or other shaped frames. • Create borders around defined spaces in the learning environment, i.e. a garden for the teddy bears, an outdoor reading area, etc. • Encouraging children to predict if the pattern could 'keep going', voting on this and

		the fingers on one hand and one more, or as four and two with ten frame images. • Model conceptual subitising: "Well, there are three here and three here, so there must be six." • Emphasise the parts within the whole: "There were 8 eggs in the incubator. Two have hatched and 6 have not yet hatched." • Plan games which involve partitioning and recombining sets. For example, throw 5 beanbags, aiming for a hoop. How many go in and how many don't? **<u>Comparison</u>** • 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' • Provide collections to compare, starting with a very different number of things. Include more small things and fewer large things, spread them out and bunch them up, to draw attention to the number not the size of things or the space they take up. Include groups where the number of items is the same. • Use vocabulary: 'more than', 'less than', 'fewer', 'the same as', 'equal to'. Encourage children to use these words as well. • Distribute items evenly, for example: "Put 3 in each bag," or give the same number of pieces of fruit to each child. Make deliberate mistakes to provoke discussion.	discussing their thoughts and reasons with a partner. • exploring patterns in stories, songs and rhymes • Where possible, represent these diagrammatically to support pattern-spotting, and predicting what will happen next, and why • Invite children to spot patterns in the home environment, or bring in examples from home • Look at fabric patterns from different cultural traditions: discussing the patterns in terms of what stays the same and what is different • Design wrapping paper for a specific event that involves creating a pattern which the children can describe. **<u>Shape and Space</u>** • Make an insect hotel – selecting tube-like shapes from a collection of varied materials, some not fit for purpose • Create an extended channel for water to flow from a high container to a low one, some distance away • Ask questions, for example: 'What shapes can you make with three people inside a loop of string? What about with four people?' 'What is the same and what is different about these?' • Make shapes with sticks and with their own bodies • Print with shapes: 'What footprint do you think this cylinder will make? What about if you roll it? • Cover objects in foil and inviting children to justify their guesses about what is inside

		• Tell a story about a character distributing snacks unfairly and invite children to make sure everyone has the same. • Make predictions about what the outcome will be in stories, rhymes and songs if one is added, or if one is taken away. • Provide 'staircase' patterns which show that the next counting number includes the previous number plus one. **Pattern** • 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. • Begin to describe a sequence of events, real or fictional, using words such as 'first', 'then...' **Shape and Space** • Develop understanding of shape, they can match a wider variety of shapes with the same size and orientation. • Matches wider variety of shapes with different sizes and orientations. • Matches combinations of shapes to each other.	• Make arrangements with a selection of different rectangles, including squares. • Choose 2D shapes to construct a 3D model, e.g. using triangles and rectangles to make a tent • Make decorations by folding and cutting • Make 3D shapes using interlocking shapes. **Measures** • Set up an Estimation Station and guessing how many things are in the jar each day • Make biscuits from a given amount of dough – choosing cutters to see who will make the most biscuits • Choose from a selection of spoons, ladles, etc, to see who can fill their pot the quickest with rice. How do you know who will be quickest? • Set up a 'filling station' with lots of different-sized containers to fill with beads, then comparing capacities • Use large bricks to measure the height of individuals • Use metre sticks to see if an elephant or dinosaur would fit in the room • Measure the growth of a beanstalk or sunflower with interlocking centimetre cubes • Compare the capacity of different bottles by filling lots of glasses. • Make picture sequences for cooking instructions • Describe sequences by re-telling stories • Discuss 'o'clock' times at registration, lunchtime, snack time, tidy-up time, etc. • Make their own timetable for a day – selecting activities and ordering them