Sequence of Learning for Mathematics

At Gloucester Nursery……
Our Intent for Mathematics:

- **Children will develop a strong grounding in number, be able to count confidently and begin to develop a deep understanding of the numbers to 10, the relationships between them and the patterns within those numbers**

- **Children will develop a secure base of knowledge and vocabulary relating to mathematics**

- **Children will develop their spatial reasoning skill across all areas of mathematics including shape space and measures**

- **Children will develop positive attitudes and interests in mathematics including shape and measures, looking for patterns and spot connections.**

	Cardinality and Counting	Comparison	Composition	Pattern	Shape and Space	Measure
Early Stages Stage 1	• To become familiar with number names through action songs and rhymes • Children will begin to understand the concept of things/ objects existing even if they cannot be seen. • Understand more and zero.	• To explore and investigate objects of different sizes in their everyday play. • Recognise who has more or less when playing games.	• Explore and investigate objects that can be split up and put into different containers.	• Explore and make arrangements with different objects. • Make collections of things from provision, inside and outside. • Notice and talk about things that are the same and things that are different.	• Explore various objects and recognise big and small things.	• Start to get to know daily routines and the order of things, e.g. getting up, breakfast, etc.
Implementation	• Staff to provide regular opportunities for children to hear number names through songs and rhymes. • Play with interactive toys • Finger rhymes	• Children to have access to a variety of resources e.g. blocks, containers or various sizes. • Building towers using bricks and comparing.	• Staff to provide equipment / objects such as conkers, buttons, gemstones and various containers.	• Introduce new words same and different. • Give children access to objects that are noticeably the same / different. • Adults to model same and different in play.	• Children to have access to different objects that are variable in size. • Combine objects like stacking blocks and cups • Put objects inside others and take them out again • Encourage children to climb over, under through when playing outside.	• Use daily rhymes, visual timetables, stories about routines, games / role-play with adults.
Impact	• When children are playing with toys or singing songs, they will say number names in a mixed up order. • Children will be able to sort out toys and things so that all the same ones are together. • Children will begin to use words such as “big” and “little” to describe toys, clothes and pictures in a book. • Children will try to put the shape pieces into a jigsaw board and sometimes match the right piece into the right hole. • Children will be able to build towers, long lines across the floor and simple arrangements with bricks.					

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Early Stages 2	• Children to be confident in knowing that things exist even if they cannot be seen. • Children can give a small number of objects when asked. • To be able to say some other number names even if they're not in the correct order.	• To begin to organise various objects according to criteria e.g. all the red cars, all the teddy bears.	• To sort objects by association for example, puts all the cars with the garage. • To begin to separate objects into specific containers beginning to use a criteria.	• To use a variety of resources and equipment to make their own arrangements of objects • To use objects and materials to print and make simple patterns.	• To enjoy completing simple inset puzzles.	• To be able to compare different items and notice the differences, e.g. something is small or big. • Children are able to fill and empty containers with a variety of resources.
Implementation	• Adults to play games such as Kim's game, Hide 'n' Seek etc. • Adults to model reciting number names through songs, rhymes and play. • React to changes of amounts in a group of up to three items • Counting-like behaviour, such as making sounds, pointing or saying some numbers in sequence	• Give children opportunities to organise various objects within the provision. • Compare amounts saying 'lots', 'more' or 'same'	• Staff to encourage children to take part in routines such as tidy up time to help sort objects.	• Opportunities for printing, pattern making in the creative and malleable areas. • Provide resources for children to explore and make their own arrangements.	• Provide good quality simple puzzles that support children's interests. • Provide boxes and blocks to play with freely inside and outside • Compare sizes, weights suing gesture and language – 'bigger/little/smaller,' 'high/low' 'tall' 'heavy'	• Provide various sizes containers and resources, in the sand, water, role-play and play dough areas. • Introduce new words to describe weight and size.
Impact	• Children will be able to give adults the right number of objects from a collection when you say "please give me one", "please give me two" • Children will be able to say some number names in order. • Children will be able to point to shapes and patterns in pictures and clothes. • Children will be able to sort objects according to association. • Children will begin to make their own models and structures. • Children will use objects to print their own designs. • Children will be able to complete simple puzzles.					

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Developing Stage 3	• Recite numbers past 5	• Children can say when there is 'more', 'less', 'few', 'lots', 'many' when looking at groups of objects. • Children can see that groups of things / sets of objects change of one of the group is taken away or something is added to it.	• Can split groups of numbers for example, can separate 5 little • monkeys on their beds or 5 little ducks in a pond.	• Uses a range of resources to represent ideas about numbers, e.g. counters, chalks, buttons, chalk boards. • Use objects they find in the environment to make patterns with and can begin to talk about their patterns.	• Is able to sort objects according to shape / size / and use language of size, - big, bigger, biggest, short, shorter, shortest.	• Shows an understanding of the past and future by talking about • 'before', 'later' or • 'soon' during play.
Implementation	• Reciting of numbers – Pow Wow times, snack, lunches • Tidy up time routine. • During play staff to ask questions 'Can you give me 2 spoons?' • Playing games— skittles	• Looking at sets of objects / resources using language that models comparative amounts. • Staff play games.	• Adults to provide props and resources to learn and sing number rhymes which require a number to be partitioned.	• Adults to provide various resources for children to arrange - use photo frames, light boxes etc. so children can experiment and explore pattern. • Provide patterned materials, dots, stripes etc.	• Through play opportunities provide resources that encourage language of size to be used in role play - spoons of different sizes, bowls, plates, cups, dolls etc. • What's in the box game?	• Adults to model language using vocab associated with time and events during the day. • Adults to model using visual time tables.
Impact	• Children will be able to show adults which group of toys or plate of food has "more". • Children will be able to use words like "more" and "a lot" to describe amounts of objects. • Children will know that if a toy is added to a collection or some food added to a plate they will have more and if the adult takes something away they don't have as much. • Children will be able to sort a collection of objects so that ones that are the same shape or size are altogether. • Children will begin to know the order of things that happen every day (such as I get out of bed, I have my breakfast, I get dressed) and can tell you what happens next.					

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Embedding Skills Stage 4	• Fast recognition of up to 3 objects – subsidising • Recite numbers in order from 1 to 10, but may not be able to count the correct number of objects for each number name. • Recognise some different numbers in the environment. • Begin to count up to 5 objects from a larger group. • Begin to solve number problems to 5. • Begin to represent quantities using finger numbers, marks on paper.	• Joins in with number songs, knowing a group can be changed when items are added and taken away.	• Sing rhymes where a number is partitioned. • Begin to count sets of objects—3 frogs on a log, 2 in the pond. • Talk about smaller numbers within a larger group, in my box of buttons I have 2 blue ones and 3 white ones.	• Listen to and copy a repeated pattern using sounds or actions. • Create own pattern using specific colours when asked to e.g. using blue and red. • Confidently have a go at making own patterns.	• Talk about and explore 2-D and £-D shapes using informal and mathematical language: 'sides,' 'corners,' 'straight,' 'flat,' and 'round.' • Names shapes, triangle, square, circle and rectangle, cuboid, cube etc. • Uses shapes according to their properties, triangle for a roof. • Understands positional language. • Creates pictures using 2D shapes.	• Compare lengths and heights of objects. • Know full and empty when using containers. • Understands heavy • Knows a clock tells the time. • Role plays with money
Implementation	• Staff encourage children to join in singing • Playing games • Ask children to set up role-play with three teddies, how many plates to they need? • Solving real world mathematical problems with numbers up to 5	• Share food In the role-play area. Ask the children questions, who has more / less?	• Counting the total number of children in the class. • Play games outside.	• Provide examples of patterns everywhere, in • nature and man-made.	• Using small world animals, put similar ones together, put them in order of size. • Draw round shapes and practice cutting them out.	• Playdough make cakes, use weighing scales and talk about which is the heaviest • Look at sand timers and compare 5 minutes and 1 minute.
Impact	• Children will be able to say numbers from 1 to 10. • Children will be able to recognise some names of numbers in the environment. • Children will be able to count out 5 objects from a larger group of objects. • Children will begin to listen to number problems and try to solve them, using props and objects to help them. • Children will be able to name 4 basic shapes. • Children will be able to make a picture using 2-Dshapes. • Children will understand and begin to use positional language. • Children will be able to use the words full, empty and heavy correctly.					

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Understanding and Applying Stage 5	• Children to say numbers beyond 10. • Count back from 10 to 0. • Match a number to the right group of objects. • Begin to say what is 1 more and 1 less to 5. • Beginning to know how many are in a group without counting them.	• Compare groups of objects noticing when they have more, less or the same. • Count to check how many are in a group.	• Investigate different ways to separate 5 objects, recognising that the number can be split different ways but the total is always the same.	• Make more complex repeating patterns. • Use language to describe patterns they have made. • Check and change a pattern if there is a mistake. • Record their own pattern using pictures and symbols.	• Name 2-D shapes and some 3-D shapes. • Understand the difference between flat and solid. • Use positional language • Talk about the shapes whilst constructing models. • Describe a familiar route	• Order items by length and height. • Measure items using non—standard units. • Understand language heavy and light. • Begin to use language relating to time. • Begin to understand distance. • Know what money is used for.
Implementation	• Involve money in role play shops, talking about prices and counting out items. • Play games using dice, beginning to count on.	• Number hunts outside, counting the number of objects and recording on paper. • Play ICT games, more or less.	• Planting seeds and recording the number of plants that grow. • Drawing pictures for number rhymes.	• Make art outside using natural resources, leaves, stones, petals etc. • Make flags and print own designs on	• Design own models and talk about the shapes that they use for specific purposes.	• Real baking activities, measuring out and weighing ingredients. • Use a timer for oven to cook. • Use different lengths of string to make bird feeders.
Impact	• Children will be able to say numbers beyond 10. • Children will be able to count backwards from 10 to 0. • Children will begin to know what is 1 more and 1 less. • Children will begin to know how many objects are in a group without counting them. • Make more complex patterns. • Make complex repeating patterns. • Name 2-D shapes and know the difference between flat and solid shapes. • Order items by length and height.					

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Secure Confident Learners **Stage 6**	• Find the total of 2 groups by counting all of the objects. • Know the correct number symbols for numbers to 10. • Order numbers to 10. • Identify missing numbers. • Solve number problems to 10 objects.	• Use language more or less to compare groups. • Find 1 more and 1 less than a number to 10. • Make comparisons between objects relating to size, length, weight and capacity	• Find a hidden number from a group of 5 through playing hiding games with a number of objects in a box. • Make a sensible guess at the number of hidden objects.	• Choose their own rules for a pattern. • Ask a friend to copy a pattern. • Continue a pattern that stops in the middle of a repeat. • Notice and correct an error in a repeating pattern • Begin to describe a sequence of events real or fictional using words such as 'First' and 'then'	• Name 2-D and 3-D shapes. • Select a named shape. • Sort shapes into groups. • Recreates models • Uses knowledge of shapes to build a strong structure. • Discuss routes and locations – use words like 'in front of' and 'behind.'	• Orders items by weight, heavy or light. • Begin to use ruler and tape measure to measure items. • Compare weights and volumes. • Use language relating to time.
Implementation	• Set up role play shops, use money to buy items. • Make tally charts	• Use coins to vote for their favourite colour, count the coins to see which was the most popular.	• Tally charts, recording numbers. • Playing number games outside, skittles, throwing bean bags into hoops with different scores. Recording who gets the biggest score.	• Transient art - Children go on hunt for loose parts and use picture frames to produce patterns and pictures.	• Question the children, what do you think comes next in our pattern? • Explore natural resources to extend patterns • Build structures to go with stories, three pigs house, the bridge for the goats etc.	• Creating own runway the labelling • measurements where their plane got to. Have a competition who can get their plane the furthest.
Impact	• Children will be able to find the total of 2 groups of objects by counting them. • Order numbers to 10 and identify missing numbers from a sequence. • Solve number problems to 10 using objects. • Find 1 more and 1 less than a number to 10. • Make sensible estimates at the number of objects. • Make and continue repeating patterns. • Use natural materials to make their own pattern. • Make 2D and 3D shapes. • Sort shapes into groups • Oder items by weight, using heavy and light correctly.					