Mathematical development Curriculum and Step Map Cycle 1

INTENT: Maths is a practical subject that pupils will encounter in everyday life. Maths encourages children to learn to build on past knowledge to solve problems. We encourage children to use their creativity and imagination, to solve maths problems in a range of real-life contexts, through play and through group and 1:1 intervention work. This will support our learners to become confident to be as independent as possible in the outside world. We recognise that learners may be at different stages of mathematical development and demonstrate different levels of understanding across curriculum areas. Shared curriculum themes are accessed through individual starting points, prior learning and developmental needs, with appropriate challenge for every learner.

IMPLEMENTATION: Through a variety of creative and practical activities, we teach the knowledge, understanding and skills needed to solve maths problems. These include:

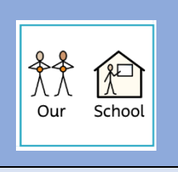
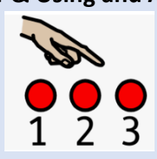
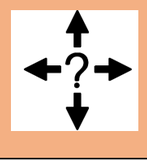
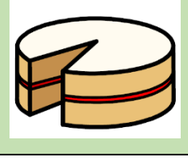
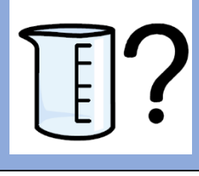
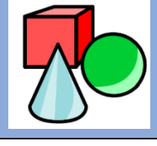
Geometry: Have opportunities to explore a range of shapes and measuring equipment, gain understanding of the properties of shapes, materials and objects, gain understanding on differentiating items into categories, use shapes to create products, artworks and to solve problems

Number / Measure: Grow a deep understanding of cause and effect, use knowledge of numbers and number facts to make choices and solve problems, select from and use a wider range of tools and equipment to perform practical tasks and solve problems

Statistics: log, investigate and analyse a range of data, show persistence when improving your efforts to gain the desired result and understand how objects can be categorised Activities, questioning, vocabulary, resources, adult support and expected outcomes are adapted to suit each learner. The Mathematical Development Step Map informs next steps, from sensory exploration and cause and effect to counting, reasoning and problem-solving. Modelling, repetition, visual supports and concrete resources promote understanding and independence.

IMPACT: We ensure the children:

- develop the creative, technical and practical expertise needed to perform everyday tasks confidently and to participate successfully in an increasingly mathematical world
- build and apply a repertoire of knowledge, understanding, skills and vocabulary in order to solve real life problems
- understand and apply the principles of maths in al contexts in everyday life, e.g. making choices. Progress is measured from individual starting points using the Mathematical Development Step Map, rather than expecting all pupils to achieve the same outcome within a given timescale. Ongoing assessment identifies small but significant steps in understanding, engagement, communication and independence, including the application of skills across contexts.

	Autumn A	Autumn B	Spring A	Spring B	Summer A	Summer B
Topic	**Ourselves** 	**Weather and Seasons** 	**Community and Culture** 	**Spring and Growth** 	**Creatures Great and Small** 	**Our School** 
	Number & Using and Applying 					
Unit	**Measure- Time** 	**Geometry- Exploration** 	**Geometry- 2D shape** 	**Fractions** 	**Measure- Capacity** 	**Measure- 3D shapes** 

Overview:	Pupils will learn about: **Measure- Time** • developing awareness of daily routines and sequencing • exploring concepts of now/next, before/after and first/then • using visual timetables and timers to support understanding • recognising familiar events within the school day • joining in with songs, countdowns and repetitive routines linked to time • exploring day/night and seasonal changes	Pupils will learn about: **Geometry- Exploration** • exploring position and direction through movement and play • using positional language such as in, on, under, next to and behind • investigating patterns, textures and shapes in the environment • sorting and grouping objects in different ways • exploring space, construction and problem-solving activities • developing curiosity through sensory exploration • applying maths skills during practical investigations and outdoor learning.	Pupils will learn about: **Geometry- 2D shape** • exploring 2D shapes through sensory and practical activities • recognising familiar shapes in everyday environments • matching and sorting shapes by size, colour and type • building and creating using shape resources • using shape vocabulary such as circle, square, triangle and rectangle • identifying shapes in objects, pictures and the classroom	Pupils will learn about: **Fractions** • exploring sharing through play and snack activities • experiencing whole and part using practical resources • developing understanding of equal groups through adult modelling • using simple language such as whole, half and share • dividing objects and food into parts • exploring fractions through sensory and creative activities • developing turn taking and cooperation during shared activities.	Pupils will learn about: **Measure- Capacity** • exploring full and empty through water, sand and sensory play • comparing amounts using practical resources • investigating pouring, filling and transferring activities • using vocabulary such as full, empty, more and less • developing fine motor and coordination skills through practical exploration • measuring informally using containers and everyday objects • applying capacity skills during cooking, messy play and life skills activities.	Pupils will learn about: **Measure- 3D shapes** • exploring 3D shapes through sensory and hands-on activities • recognising common 3D shapes in everyday objects • building and constructing using a variety of materials • comparing objects by size and shape • using vocabulary such as cube, sphere and cylinder • investigating rolling, stacking and balancing • applying shape knowledge during play, construction and community activities.
Number & Using and Applying: Early mathematical development Cherry Tree Branches 1–4	**Sensory attention:** notice and respond to familiar sensory stimuli (e.g. visual, auditory or tactile).	**Cause and effect:** explore actions that create an effect; repeat an action and begin to notice when an action changes the outcome.	**Early number development**: share attention with an adult and begin to anticipate familiar number rhymes and repetitive songs.	**Early number development**: continue to join in with familiar number rhymes, songs and repetitive counting routines.	**Early number development**: show interest in number songs and routines; begin to anticipate repeated parts.	**Early number development**: respond to familiar number language and counting routines in everyday activities.
Number & Using and Applying: Developing number understanding Cherry Tree Branches 4–7	**Number rhymes and sequence:** show interest in number rhymes and songs; begin to join in with repeated number language.	**The concept of one:** experience ‘one’ in practical play; begin to select one item from a small group with adult support.	**Number sequence:** begin to recite number names in sequence during familiar songs and routines.	**Quantity:** respond to ‘one’ and ‘lots’ and begin to select the requested quantity from a group.	**Counting and one-to-one correspondence:** count up to five objects, saying one number name for each object, with support as needed.	**Counting and quantity:** count up to five objects accurately and select or give a requested quantity within five.
Number & Using and Applying: Developing number skills Cherry Tree Branches 8–10	**Representing number:** begin to show quantities using fingers, marks, pictures or objects.	**Numeral recognition:** begin to recognise numerals practical activities and familiar environments.	**Counting sets:** count out up to six objects from a larger group; begin to recognise small quantities in different arrangements.	**Counting and number recognition:** count irregular arrangements of up to ten objects and match numerals to quantities, developing accuracy.	**Total number:** explore two small groups and begin to find how many there are by counting all the objects.	**Number relationships:** recognise that a group’s quantity stays the same when objects are rearranged; begin to explore one more/one less and practical addition or subtraction.
Vocabulary	Now, next, later, before, after, morning, afternoon, evening, today, tomorrow, yesterday, day, night, finished, wait	In, out, under, inside, outside, move, turn, build, follow	Shape, circle, square, rectangle, triangle, straight, curved, round, same, different	Whole, part, same, share, split, half	Full, empty, more, less, same, fill, pour, measure	Cube, cuboid, sphere, cone, pyramid, face, edge, flat, curved, roll, stack, build, same, different.

Branch 1	Branch 2	Branch 3	Branch 4	Branch 5	Branch 6	Branch 7	Branch 8	Branch 9	Branch 10
Notices Stimuli	Anticipates repetitively presented stimulus	Shows understanding that their action causes a specific effect	Shows an interest in number rhymes and songs.	Understand the concept of 'one'	Recites some number names in sequence	Uses some number names and number language spontaneously in context	Finds the total number of items in two groups by counting all of them	Counts to 10 accurately, matching numerals and beginning to count beyond 10	Estimates how many objects they can see and checks by counting them for up to 10 objects
- Taste - Smell - Touch - Visual - Auditory - Vestibular		- Switch toys or computer program - Responsive toys, mobiles or instruments		- During play situations - During structured activities	- During play situations - During structured activities				
Responds to very obvious stimulus	With support explores immediate environment	Begins to explore immediate environment with intent	Joint attention	Attempts, sometimes successfully, to fit shapes into spaces	Selects from a group when asked: "please give me one", "please give me lots"	Recites numbers in order to 10	Matches numeral and quantity correctly up to 5	Counts out up to six objects from a larger group	Can count to at least 20, forwards and backwards
- Taste - Smell - Touch - Visual - Auditory - Vestibular			- During social games - During structured activities - During play situations	- Shape sorters - Inset puzzles - Objects into containers					
Demonstrates familiarity with recently presented stimulus	Accidental actions cause effect	Repeats action when first attempt unsuccessful	Object permanence	Beginning to understand the concepts of 'now' and 'next'	Knows that numbers identify how many objects are in a set	Realises not only objects, but anything can be counted, including steps, claps or jumps	Begins to represent numbers using fingers, marks on paper or pictures	Counts an irregular arrangement of up to ten objects	Can identify, read and write numbers up to 20
		- Switches/ ICT toys - Problem solving with real objects (opening lids etc.)							
Responds to range of stimuli	Redirects attention to second object	Attracts attention	Does two different actions in sequence to get a reward	Matches objects to a 2 dimensional representation	Shows an understanding of one to one correspondence by distributing up to 6 items accurately	Recognise some numerals of personal significance	Knows that two groups of 3 or less objects are the same or different	Can add two groups by counting on from first group total	Knows the number that is one more or one less than a given number up to 20
- Taste - Smell - Touch - Visual - Auditory - Vestibular	- Smell - Touch - Visual - Auditory - Vestibular		- Switches/ ICT toys - Problem solving with real objects (opening lids etc.)						- With visual support - Without visual support
Responds consistently to one stimulus	Looks briefly after object disappearing from their field of vision	Modifies action when repeating action does not work	Explores filling and emptying containers	Selects tools for purpose in play situations	Sorts objects by colour	Counts up to five objects accurately by saying one number name for each item	Recognises numerals 1 - 5	Can share up to ten items in practical situations	Understands the concepts of 'add', 'take away' and 'equals' up to 10
		- Switches/ ICT toys - Problem solving with real objects (opening lids etc.)	- Sand - Water - Objects - Materials - Posting activities	- Mark making - Functional tools	- Same shade - Different shades (e.g. light & dark green)	- During play situations - During structured activities	- Printed - Digital - In environmental print		
Responds differently to different stimuli	In a reactive environment repeats action which obtains sensory feedback	Selects from two or more items	Matches identical objects		Follows a visual timetable to anticipate familiar activities	Understands concept of 'more', e.g. knows that more cups are required	Uses positional language (e.g. in, out, on, off, over, under)	Uses the language of 'more' and 'less' to compare two sets of objects	Counts in twos up to 20

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						so that all children have one			
		- Familiar items - Unfamiliar items			- 2 symbols (now & next) - More than 2 symbols		- During play situations - During structured activities		
Briefly follows moving stimulus	Responds to cause and effect	Early problem solving – tries new strategy when old one fails	Makes lines and towers with blocks in play situations		Begins to show an understanding of the concepts big and small	Copies simple patterns and makes arrangements with shapes	Sustained interest in construction activities and talks about shapes or arrangements (short or tall)	Can count and order numbers, starting from a number other than 1	Shows an understanding of ordinal numbers (first, second, third)
- Audio - Visual	- Switch toys or computer program - Responsive toys, mobiles or instruments	- Switches/ ICT toys - Problem solving with real objects (opening lids etc.)							- During everyday activities - During structured activities
	In an everyday environment repeats action which obtains sensory feedback	Initiates strategies to achieve desired results in a variety of contexts (exercises autonomy)	Combine two construction items		Uses construction materials to create their own simple structures and arrangements	Begins to sort objects according to properties such as shape, size or type for identical objects	Organise and categorise non-identical objects, e.g. putting all the teddy bears together or teddies and cars in separate piles	Knows that number of objects remains the same when they are rearranged with nothing taken away	Can double and half up to 10 items in practical situations
		- During social games - During structured activities - During play situations - ICT activities			- Junk modelling - Lego etc. - Playdough /clay				
	Looks backwards and forwards between two objects (knows two objects are present)	Passes toys from one hand to another				Selects a particular named 2D shape	Can name a particular 2D shape	Can describe their relative position such as ‘behind’ ‘in front of’ or ‘next to’	Orders three items by weight or capacity
							- After 2 or more choices - Spontaneously (no choices given)		
	Reaches out for, touches and begins to hold objects					Can identify biggest and smallest items/objects	Recognises and uses the language ‘full’ and ‘empty’	Orders three or more items by length or height	Recognise and know the value of coins to 10p
	- Light toys - Sound toys - Instruments - Tactile objects					- From 2 items - From 3 or more items	- Liquids - Sand/grains - Objects (in containers)		
	Explores objects with mouth, often picking up an object and holding it to the mouth							Uses familiar objects and common shapes to create, recreate and continue patterns and build objects	Solve simple problems relating to: addition and subtraction, doubling, halving, sharing, money (all to 10), and measurement using direct comparison
	Holds an object in each hand and brings them together in the middle, e.g. Holds two blocks and bangs them together							Recognises and uses the language of ‘heavy’ and ‘light’	Beginning to use mathematical names for ‘solid’ 3D shapes

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								- During structured activities During everyday activities	
								Can compare two volumes or weights	Tell the time to the nearest hour
								Begins to use every day language related to money – ‘pay’, ‘change’, ‘cost’, ‘money’ ‘pennies’	Recognise ‘half’ as one of two equal parts of an object
								- During structured activities - During everyday activities	
								Uses everyday language related to time (e.g. ‘before’, ‘later’, ‘after’, ‘soon’)	