Mathematics

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 relationships 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 adults and peers about what they notice and not be afraid to make mistakes.

ELG 11- Number	**ELG 12- Numerical Patterns**
Children at the expected level of development will: - Have a deep understanding of number to 10, including the composition of each number; - Subitise (recognise quantities without counting) up to 5 - 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.	Children at the expected level of development will: -Verbally count beyond 20, recognising the pattern of the counting system - Compare quantities up to 10 in different contexts, recognising when one quantity is greater than, less than or the same as the other quantity - Explore and represent patterns within numbers up to 10, including evens and odds, double facts and how quantities can be distributed equally.

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What Maths looks like in Reception

Daily maths adult focused session - Space Shape and Measure 1x per week and NCETM 4x per week

Weekly small group adult activities which consolidate previous learning/address misconceptions

Number Songs and Rhymes

Birthday's and birthday graph calendar - who has a birthday this month, who is 4/5 years old, how old will you be next?

Opportunities for Maths across all areas of provision. Some examples:

Water tray- exploring capacity - vocabulary of full, empty, half full etc as well as counting, measuring and prediction eg how many more scoops to fill the container

Sand- tracing shapes and numbers in dry sand, exploring capacity and mass e.g. which container feels heavier?

Construction- creating models, building towers (height) exploring shapes - 2D and 3D- creating enclosures and structures, problem solving, noticing patterns - symmetry

Dough- measuring ingredients to make the dough, counting cups. Fractions eg- cutting or separating dough in half to share or using cutters to halve the 'pizza' or 'cake' Mass- weighing and comparing the dough

Home corner- setting the table- sharing amounts equally, role playing different events. Phones and remotes- recognising and pressing numbers

Maths Area- resources/activities linked to adult let teaching

Daily singing of the days of the week and months of the year

Daily opportunities for counting- self registration- 5 and 10 frames, travel tracker- more/fewer

Counting down to special events e.g. Christmas (advent)

Timeline of events over the year

Tooth brushing- 2 minute timer

Positional and directional language during play - especially construction and outdoor den building etc - under, next to, behind.

Pattern- singing of songs, line up time e.g. boy girl, boy, boy, girl.

Daily opportunities for 'noticing' similaties and differences e.g. instructions for transitions- children with cardigans/without cardigans, with black socks/with white socks

Ordinal Numbers - 1st, 2nd, 3rd... transitions such as line up time, coming to sit on the carpet, going to wash hands etc

Daily time table - sequencing time and events

Drawing Club - describing shapes and lines as we draw e.g. straight lines, curved lines, triangle, circle, square shapes

Discussion and questioning in stories linked to number and SSM

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Progression of knowledge and Skills *Development matters knowledge and skills are highlighted in green* **Black text is knowledge and skills from NCETM and White Rose (Space, Shape and Measure)**						
	Autumn 1	**Autumn 2**	**Spring 1**	**Spring 2**	**Summer 1**	**Summer 2**
NCETM	Pupils will build on previous experiences of number from their home and nursery environments, and further develop their subitising and counting skills. They will explore the composition of numbers within 5. They will begin to compare sets of objects and use the language of comparison.		Pupils will continue to develop their subitising and counting skills and explore the composition of numbers within and beyond 5. They will begin to identify when two sets are equal or unequal and connect two equal groups to doubles. They will begin to connect quantities to numerals		Pupils will consolidate their counting skills, counting to larger numbers and developing a wider range of counting strategies. They will secure knowledge of number facts through varied practice.	
	Subitising					
	Perceptually subitise within 3 Identify sub-groups in larger arrangements Create their own patterns for numbers within 4 Practise using their fingers to represent quantities which they can subitise Experience subitising in a range of contexts, including temporal patterns made by sounds.	Subitise within 5, perceptually and conceptually, depending on the arrangements.	Increase confidence in subitising by continuing to explore patterns within 5, including structured and random arrangements Explore a range of patterns made by some numbers greater than 5, including structured patterns in which 5 is a clear part Experience patterns which show a small group and '1 more'	Explore symmetrical patterns, in which each side is a familiar pattern, linking this to 'doubles'.	Continue to practise increasingly familiar subitising arrangements, including those which expose '1 more' or 'doubles' patterns Use subitising skills to enable them to identify when patterns show the same number but in a different arrangement, or when patterns are similar but have a different number	In this half-term, the children will consolidate their understanding of concepts previously taught through working in a variety of contexts and with different numbers.

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	Develop fast recognition of up to 3 objects, without having to count them individually ('subitising').		Continue to match arrangements to finger patterns.		Subitise structured and unstructured patterns, including those which show numbers within 10, in relation to 5 and 10 Be encouraged to identify when it is appropriate to count and when groups can be subitised.	
	Cardinality, Ordinality and Counting					
	Relate the counting sequence to cardinality, seeing that the last number spoken gives the number in the entire set *Know that the last number reached when counting a small set of objects tells you how many there are in total ('cardinal principle').* Have a wide range of opportunities to develop their knowledge of the counting sequence, including through rhyme and song	Continue to develop their counting skills Explore the cardinality of 5, linking this to dice patterns and 5 fingers on 1 hand *Show 'finger numbers' up to 5.* Begin to count beyond 5 *Recite numbers past 5.* Begin to recognise numerals, relating these to quantities	Continue to develop verbal counting to 20 and beyond Continue to develop object counting skills, using a range of strategies to develop accuracy Continue to link counting to cardinality, including using their fingers to represent quantities between 5 and 10 Order numbers, linking cardinal and ordinal representations of number.	Continue to consolidate their understanding of cardinality, working with larger numbers within 10 *Link the number symbol (numeral) with its cardinal number value* Become more familiar with the counting pattern beyond 20. *Explore the composition of numbers to 10* *Count beyond 10*	Continue to develop verbal counting to 20 and beyond, including counting from different starting numbers Continue to develop confidence and accuracy in both verbal and object counting. Estimates how many objects they can see and checks by counting them Says the number that is one more than a given number	In this half-term, the children will consolidate their understanding of concepts previously taught through working in a variety of contexts and with different numbers. *Automatically recall number bonds for numbers 0–5 and some to 10.*

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	Have a wide range of opportunities to develop 1:1 correspondence, including by coordinating movement and counting Have opportunities to develop an understanding that anything can be counted, including actions and sounds Explore a range of strategies which support accurate counting Count objects, actions and sounds. *Counts up to three or four objects by saying one number name for each item* *Recognise some numerals of personal significance*	they can subitise and count. *Link numerals and amounts: for example, showing the right number of objects to match the numeral, up to 5.* *Counts actions or objects which cannot be moved* *Recognise numerals 1 to 5* *Say one number for each item in order: 1,2,3,4,5.*	*Counts objects to 10, and beginning to count beyond 10* *Counts out up to six objects from a larger group* *Selects the correct numeral to represent 1 to 10* *Counts an irregular arrangement of up to ten object*			

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	Composition					
	See that all numbers can be made of 1s Compose their own collections within 4.	Explore the concept of 'wholes' and 'parts' by looking at a range of objects that are composed of parts, some of which can be taken apart and some of which cannot Explore the composition of numbers within 5.	Continue to explore the composition of 5 and practise recalling 'missing' or 'hidden' parts for 5 Explore the composition of 6, linking this to familiar patterns, including symmetrical patterns Begin to see that numbers within 10 can be composed of '5 and a bit'.	Explore the composition of odd and even numbers, looking at the 'shape' of these numbers Begin to link even numbers to doubles Begin to explore the composition of numbers within 10. *Finds the total number of items in two groups by counting all of them*	Explore the composition of 10. *In practical activities and discussion, beginning to use the vocabulary involved in adding and subtracting* *Records using marks that they can interpret and explain*	In this half-term, the children will consolidate their understanding of concepts previously taught through working in a variety of contexts and with different numbers.
	Comparison					
	Compare numbers Understand that sets can be compared according to a range of attributes, including by their numerosity. Use the language of comparison, including 'more than' and 'fewer than' Compare sets 'just by looking'.	Compare sets using a variety of strategies, including 'just by looking', by subitising and by matching. Compare sets by matching, seeing that when every object in a set can be matched to one in the other set, they contain the same number and are equal amounts.	Continue to compare sets using the language of comparison, and play games which involve comparing sets. Continue to compare sets by matching, identifying when sets are equal. Explore ways of making unequal sets equal.	Compare numbers, reasoning about which is more, using both an understanding of the 'howmanyness' of a number, and its position in the number system. *Compare quantities using language: 'more than', 'fewer than'*	Order sets of objects, linking this to their understanding of the ordinal number system. Finds one more or one less from a group of up to five objects, then ten objects	In this half-term, the children will consolidate their understanding of concepts previously taught through working in a variety of contexts and with different numbers.

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	Uses the language of 'more' and 'fewer' to compare two sets of objects		*Understand the 'one more than/one less than' relationship between consecutive numbers* .			

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	Shape/Geometry		
SSM	*Combine shapes to make new ones – an arch, a bigger triangle, etc* Compose and decompose shapes so that children recognise a shape can have other shapes within it, just as numbers can Notice circles and triangles around them Use informal and mathematical language to describe properties of circles and triangles. Compare circles and triangles Notice squares and rectangles around them Begin to use informal and mathematical language to describe squares and rectangles. Compare squares and rectangles Describe 2D shapes using vocabulary 'sides' 'straight' 'curved' 'corners' Compose and decompose shapes and combine to make different shapes eg. 2 triangles to make a square, 2 squares to make a rectangle *Select shapes appropriately: flat surfaces for building, a triangular prism for a roof, etc.*	Recognise and name 3D shapes Find 2D shapes within 3D shapes Use 3D shapes for tasks- rolling and stacking *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'.* Explore 3D shapes in the environment Select, rotate and manipulate shapes to develop spatial reasoning skills Compose and decompose shapes so that children recognise a shape can have other shapes within it, just as numbers can	Select shapes for a purpose Rotate shapes Manipulate shapes Explain shape arrangements Compose shapes and decompose shapes Copy 2-D shape pictures Find 2-D shapes within 3-D shapes

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	Pattern		
	Continue, copy and create repeating patterns. Explore simple patterns (visual and auditory) Recognise a simple AB pattern Copy and continue basic patterns (AB patterns) Create own simple patterns (AB patterns) *Extend and create ABAB patterns – stick, leaf, stick, leaf.* *Notice and correct an error in a repeating pattern* Understand concept of a pair (2 objects that match/go together) *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.*	Identify, copy and continue more complex patterns (ABB, ABC, AAB) Notice and describe patterns in the environment Make pairs Identify odd and evens	Identify units of repeating patterns Explore and Create own pattern rules Replicate and build scenes and constructions Visualise from different positions

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	Measure		
	Know that objects can be compared and ordered by size. Know that objects can be compared and ordered by their mass. Know that objects can be compared and ordered by their capacity. *Make comparisons between objects relating to size, length, weight and capacity*	*Compare length, weight and capacity* Know that objects can be compared and ordered by their mass using language of heavy and light Compare by mass and find a balance Know objects can be balanced by adding more or taking some away Know objects can be compared and ordered by capacity using language of full and empty Know that objects can be compared by length using language of long and short Know that objects can be compared by height using language of tall and short. Talk about time. Order and sequence events *Begin to describe a sequence of events, real or fictional, using words such as 'first', 'then...'*	Consolidation Begin to become familiar with non-standard and standard units of measurement Time- o'clock

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	Position and Direction		
	Begin to use positional language such as 'in' 'on' 'under' 'over' 'beside' 'between' 'in front of' 'around' 'through' and 'behind' *Understand position through words alone – for example, "The bag is under the table," – with no pointing.*	Begin to use language such as forwards, backwards, sideways, turn, left, right	Describe positions Give instructions to build Explore mapping Represent maps with models Create own maps from familiar places *Describe a familiar route.* *Discuss routes and locations, using words like 'in front of' and 'behind'*