

Mathematics

**Statutory Framework for the Early Years Foundation Stage 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.

Our Broad Curriculum Aims:

- **Resilient**- The importance of making mistakes and learning from them, developing a can-do attitude.
- **Articulate**- Through rich conversation and modelled language children communicate effectively using a wide vocabulary
- **Problem solvers**- Through questioning and challenges children seek their own problems to solve.

Counting and cardinality					
What we want our children to learn	Progression	Vocabulary	Activities	Positive Relationships	Enabling Environments
By the end of EYFS I can: • count forwards to beyond 20 • count backwards beyond 10	•Says some counting words • begins to count by rote, saying some numbers in the correct order • counts forwards to 5, then 10, then 20 and beyond	Count Number names Five frame Ten frame Numicon	Daily number rhymes  Finger gnosis – children to hide fingers behind their back, show a number without looking at their fingers	Adults will take the opportunity throughout play to count, sing number rhymes and talk through the	A number rich environment, where there is opportunity to count in all areas both indoors and

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<ul style="list-style-type: none"> <li>• subitise to 5 and conceptually subitise beyond 5</li> <li>• recognise some dice patterns, numicon pieces, numberblocks without counting</li> <li>• count out 20 objects (stable order principle)</li> <li>• match numerals to quantity to 20</li> <li>• Know that if the set of objects are moved there are still the same number (conservation)</li> </ul>	<ul style="list-style-type: none"> <li>• counts back from 3, then 5, then 10 and beyond</li> <li>• counts on and back from any number</li> <li>• can give 1 or 2 objects when asked</li> <li>• understands that anything can be counted, such as jumps, bets etc</li> <li>• counting 1 to 1, one touch one count starting with 3 objects then increasing amount of objects</li> <li>• uses numbers in their independent play, e.g. we need 3 spoons, one for each baby</li> <li>• uses fingers to represent numbers</li> <li>• recognises if they move the 3 objects apart they still have 3</li> <li>• to take out 3 objects from a larger group, increase the amount taken to 20</li> <li>• understand that the final number counted represents how many objects (cardinal value)</li> <li>• recognises 1 or 2 objects without counting (subitise), then the number of objects increases</li> <li>• subitise regular patterns</li> <li>• subitise irregular patterns to 5</li> <li>• shows an interest in numerals</li> <li>• recognises numerals of personal significance</li> </ul>	<p>Subitise Forwards Backwards Next After Before Set Altogether Apart Separate</p>	<p>Picture talk, children to look at everyday objects, what can they see? How do they know? Children to talk about the number of objects and how they are represented.</p> <p>Flash cards to help children subitise</p> <p>Hide objects, quickly flash how many, can the children subitise?</p> <p>Playing games with dice to recognise dice patterns</p> <p>Counting out objects, such as give the three bears a bowl each</p> <p>Count with puppets, can the children spot the puppet's mistake?</p> <p>Counting drumbeats (things they can hear/ not see)</p> <p>Matching objects to numerals</p> <p>Read stories that count forwards and backward, e.g. Ten in</p>	<p>mathematical play of the children. Through these positive relationships children will be confident to make mistakes.</p>	<p>out. Children will be exposed to a wide range of resources to engage their interest and develop an interest in counting and number. Through daily counting children will be confident to count independently.</p>
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	recognises numerals on number line <ul style="list-style-type: none"> <li>orders numbers to 5, then 10 and beyond</li> <li>matches correct number of objects to numeral, first to 3, then 5, 10, 20 and beyond</li> </ul>		the bed, Ten out of the Bed  Play number games, where children must collect a 'set' of objects		
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Comparison					
What we want our children to learn	Progression	Vocabulary	Activities	Positive Relationships	Enabling Environments
By the end of EYFS I can: <ul style="list-style-type: none"> <li>predict how many more/ fewer objects there will be if you add or take away an object up to 20</li> <li>compare numerals (to 10) saying which is more or less/ fewer</li> <li>complete a number sentence using + - = signs</li> </ul>	<ul style="list-style-type: none"> <li>Uses words like lots and more in independent play</li> <li>enjoys filling frames/ shapes with objects, recognising there are lots</li> <li>sorts objects by different criteria, big/small or colour, describing how they have sorted the objects</li> <li>find matching objects</li> <li>sort objects by their own criteria</li> <li>articulate why an object is odd one out and cannot be sorted</li> <li>begins to recognise difference in a very large amount of objects to a small amount</li> <li>recognises when they have the same amount as their friend</li> <li>if they add to the set it will get bigger</li> </ul>	Few Less more Most Lots Many None Equal Subtract Add Take away Count on Count back Same Different	Compare the numbers  Objects for children to sort by colour, size, shape  Sing a variety of songs that add on and subtract one, encouraging children to represent the number with their fingers  Use a variety of props and puppets to sing number rhymes, so children can see the physical representation of adding and subtracting	Through daily exposure to counting and comparing numbers, children will become confident to talk about numbers and understand the language associated with comparison.  When engaging in child initiated activities, compare the number of objects, such as at snack time there are more carrots left than apples. Engage children in number rhymes and provide the resources for the	Through a number rich environment, the children will engage in the resources in their own play both indoor and out and comment on the differences they see. The outdoor area will provide opportunities for comparing the number of flowers or which sack had the most potatoes?  Give the children 'real life' experiences, in the role play area if I

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	<ul style="list-style-type: none"> <li>• if they subtract from the set it will get smaller</li> <li>• use their fingers in number rhymes to represent one less and one more</li> <li>• to be able to make two unequal sets of objects equal</li> <li>• to take away an object or add an object to a group and say how many there are</li> <li>• can say one more or one less of a number within 5, then 10 and beyond</li> <li>• recognises the + sign that they have to add</li> <li>• recognise – sign they have to subtract</li> <li>• can compare 2 numbers saying which one is more/less</li> </ul>		<p>Solving sharing problems, the children each have a plate with biscuits but one child has more – how can we make it fair- what could we do if they don't share equally?</p> <p>Fill the 5/10 frame, children to roll a dice with +/- signs, if they roll the sign they must add one or subtract one – who will fill their frame first?</p>	<p>children to sing these independently.</p> <p>Pose questions to the children to help them problem solve, ask what is the same or what is different.</p> <p>Encourage the children to share their resources, making it fair, e.g. all the children having equal amounts of blocks.</p>	<p>buy one more – how many will I have, how many will you have left?</p>
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Composition					
What we want our children to learn	Progression	Vocabulary	Activities	Positive Relationships	Enabling Environments
<p>By the end of EYFS I can:</p> <ul style="list-style-type: none"> <li>• use the part/ whole model to represent numbers to 10</li> <li>• I know that numbers to 10 are composed of smaller numbers</li> </ul>	<ul style="list-style-type: none"> <li>• Good understanding of counting/ cardinality so they know how a number is represented</li> <li>• an understanding of conservation if objects separated still have the same amount</li> <li>• talk about what they can see, e.g. there are 2 blue counters and 2 yellow</li> </ul>	<p>Part Whole Altogether Amount Total</p>	<p>Sing number rhymes, talk about how many children stood on the bus and how many sat on the bus, although still 5 - children to represent this using their fingers Play skittles or throwing balls into basket, how many</p>	<p>Through every day talk about numbers and what the children can see. The children will develop a curiosity about numbers and look at making numbers in different ways.</p>	<p>Mathematical resources provided both indoors and out so children always have exposure to number and can create their own problems. Each area of provision</p>

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<ul style="list-style-type: none"> <li>• make a reasonable estimate of several objects</li> </ul>	<ul style="list-style-type: none"> <li>• represent songs, there are 3 frogs on the log and 2 frogs in the pond but still five frogs altogether</li> <li>• represent numbers using both hands</li> <li>• separate larger numbers into 2 parts, recognising how many they make altogether</li> <li>• use ten frame and different coloured counters to represent number bonds up to 10</li> <li>• represent numbers by separating into 3 or more groups, showing all the different compositions of a number</li> </ul>		<p>have fallen over/left standing? How many in the basket/ how many out of the basket?</p> <p>Children to use Numicon to represent numbers, combining smaller Numicon pieces on top of larger amounts.</p> <p>Role play or small world situations, how can you arrange the farm animals in different places on the farm or put 10 fruits in different coloured baskets in the shop.</p> <p>Arrange animals in 3 different places, such as frogs on a log, in the mud and in the pond – how many in each area, pose questions if there were 5 in the mud how many are in the pond and on the log?</p>	<p>As the children play, model what has happened, you have got five balls in the net and 3 balls not, so you have thrown 8 balls altogether.</p>	<p>enables children to develop an interest in number and explore different ways of making a number.</p>
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Patterns					
What we want our children to learn	Progression	Vocabulary	Activities	Positive Relationships	Enabling Environments
<p>By the end of EYFS I can:</p> <ul style="list-style-type: none"> <li>•continue a pattern such as ABB or AABB</li> <li>• identify the pattern rule in ABB or AABB pattern</li> <li>• make my own pattern with a variety of materials</li> <li>• identify the error and correct a pattern</li> </ul>	<ul style="list-style-type: none"> <li>•Joins in with repeated actions in songs and rhymes and repeated refrains in stories</li> <li>•arranges toys in a line or pattern</li> <li>•recognises the pattern of the day and comments on what comes next</li> <li>•talks about patterns they see in their environment, in the natural world or when constructing</li> <li>•can talk about the patterns they see, such as blue block, red block in a tower</li> <li>•can copy a pattern, stamp, clap, stamp, clap</li> <li>•can make a AB pattern with objects available when asked, can you make a yellow and green pattern?</li> <li>•Choose their own pattern rule</li> <li>•Spot an error in an AB pattern when something extra is added</li> <li>•Continue an ABC pattern, then more complex patterns</li> <li>•Continue a pattern that stops midpoint, e.g. red blue yellow, red blue yellow, red blue.</li> </ul>	<p>Repeat Pattern Size Shape Colours</p>	<p>Sing songs with repeated actions, e.g. Heads and Shoulders</p> <p>Read familiar stories with repeated lines, e.g. 3 Bears/ 3 Billy Goats</p> <p>Music, children to tap out beats on musical instruments – shaker, drum, shaker drum – add more instruments to pattern as the children become confident</p> <p>Read books about patterns, such as stripes or spots, draw children's attention to these in the environment.</p> <p>Children to decorate objects with stripes and spots</p> <p>Compare bear card, children to complete the pattern</p> <p>Threading, follow the pattern cards to thread a necklace</p>	<p>Encourage children to recognise patterns within the environment, natural patterns and patterns the children create in their own play.</p> <p>Adults recognise the importance of exposing children to a range of patterns to help develop their mathematical understanding and make connections. As the children become more confident they will make their own patterns and be able to talk about these.</p>	<p>Providing a range of blocks and natural materials for children to make their own patterns. Musical opportunities for children to explore patterns with instruments.</p> <p>Opportunities for children to continue a pattern, through printing, block work or shape patterns.</p> <p>Pictures and cards for children to develop their own patterns and continue patterns with a variety of objects.</p>

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			<p>Autumn or Spring hunt, children to collect natural materials and make a pattern using these materials</p> <p>Spot the mistake, put patterns out for children to spot the mistake and correct the error</p>		
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Shape and space					
What we want our children to learn	Progression	Vocabulary	Activities	Positive Relationships	Enabling Environments
<p>By the end of EYFS I can:</p> <ul style="list-style-type: none"> <li>recognise 2d shapes from different orientation (e.g. a square is not always flat at the bottom)</li> <li>recognise a range of 2D shapes and can describe their properties mathematically (edge, curved, straight, vertices)</li> </ul>	<ul style="list-style-type: none"> <li>can fill and empty containers</li> <li>recognises which spaces they can fit themselves in</li> <li>completes simple inset puzzles and simple jigsaws</li> <li>can use blocks to create structures</li> <li>can make a complete train track</li> <li>recognises two objects that are the same shape</li> <li>directs the bikes and wheeled toys outside</li> <li>can use positional language in small world play</li> <li>draws maps and pictures of their models</li> </ul>	<p>Circle Triangle Rectangle Rhombus Square Sides Curved Straight Corners Edge Vertices In front Behind Next to On In Between Around Through Under Over</p>	<p>Jigsaws and puzzles to complete, becoming increasingly more difficult as the children grow in confidence and ability.</p> <p>A range of construction kits for children to explore how the different shapes fit together and can be used to build a number of models.</p> <p>Outside different sized crates and blocks which the children can use to build on a large scale.</p>	<p>As children are playing with jigsaw puzzles, adults will encourage children to look closely at the shapes – does it fit?</p> <p>During the children's play, adults will comment on what they are constructing and the different shapes they are using, ask questions to</p>	<p>A wide range of construction available to children both indoor and out so children have the opportunity to explore shapes.</p> <p>Tunnels and slides and large construction material will allow children to explore positional language.</p> <p>When tidying resources, there are shadows for children to find corresponding tool or box in areas.</p>

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<ul style="list-style-type: none"> <li>• make models of increasing complexity, having a clear vision of what I want to construct and the shapes and blocks I need to complete this vision</li> <li>• draw objects from different viewpoints, knowing the outcome will be different each time</li> <li>• programme a toy to travel in the correct direction to reach a destination.</li> </ul>	<ul style="list-style-type: none"> <li>• thinks about their viewpoint when drawing</li> <li>• in their play they utilise language linked to properties of shape when constructing</li> <li>• can identify shapes in the environment</li> <li>• can sort shapes by their properties</li> <li>• construct 3d shapes using 2d shapes</li> </ul>	<p>Above Below Forwards Backwards Right Left</p>	<p>Wheels and rods to make their own vehicles</p> <p>Beebot- can you get the Beebot from the Woodcutter's cottage over the bridge to the forest?</p>	<p>encourage children to try different shapes and sizes to see if they are happy with the result.</p> <p>Adults will expose children to positional language as they talk and comment.</p>	
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Measure					
What we want our children to learn	Progression	Vocabulary	Activities	Positive Relationships	Enabling Environments
<p>By the end of EYFS I can:</p> <ul style="list-style-type: none"> <li>• compare items by their length, weight and capacity and find items that are</li> </ul>	<ul style="list-style-type: none"> <li>• shows an interest in different sized objects</li> <li>• explores capacity by filling and emptying</li> <li>• uses language to describe differences in length, weight, capacity using informal language</li> </ul>	<p>Long, longer, longest Short, shorter, shortest Tall. Taller,</p>			

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<p>longer, shorter, heavier, lighter than a particular item</p> <ul style="list-style-type: none"> <li>•use non-standard measures, knowing they have to be the same (e.g. cubes/ bricks) to measure toys or models</li> <li>•sequence events, using the words yesterday and tomorrow</li> </ul>	<ul style="list-style-type: none"> <li>• begin to use comparative language, such as you are taller than me</li> <li>•can find objects that are longer, shorter, heavier, lighter than their object</li> <li>•orders 3 items by size, weight, or length</li> <li>• make a prediction, such as which box will be the best size to fit the car in</li> <li>• investigates tape measures, height charts and scales</li> <li>• begin to use units of measure to compare</li> <li>• begins to understand the routine and someone will collect them after story time</li> <li>• understands the first and then board, for the daily routine</li> <li>• understands the routines of the day</li> <li>• recalls a sequence of events</li> <li>• knows the month of their birthday</li> <li>• recognises the days of the week</li> <li>• knows which day will come next</li> </ul>	<p>tallest Heavy Light Full Empty Nearly full Nearly empty Morning Afternoon Night Before After Then Next Equal yesterday Today Tomorrow After that Days of the week Days of the month Minute Hour O'clock</p>			
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