EYFS Teaching for Mastery Policy 2021

Mathematics is a creative and highly inter-connected discipline that has been developed over centuries, providing the solution to some of history's most intriguing problems. It is essential to everyday life, critical to science, technology and engineering, and necessary for financial literacy and most forms of employment. A high-quality mathematics education therefore provides a foundation for understanding the world, the ability to reason mathematically, an appreciation of the beauty and power of mathematics and a sense of enjoyment and curiosity about the subject.

The aims of this policy
Mastery is for all, and the aim of this policy is to ensure all children leave our school with a secure understanding of the four operations and can confidently use both written and mental calculation strategies in a range of contexts. It aims to ensure consistent strategies, models and images are used across the school to embed and deepen children's learning and understanding of mathematical concepts.

How should this policy be used?
This policy has been designed to support the teaching and planning of mathematics in our school. The policy only details the strategies, and teachers must plan opportunities for pupils to apply these; for example, when solving problems, or where opportunities emerge elsewhere in the curriculum. The examples and illustrations are not exhaustive but provide and overall picture of what the mathematics in our school should look like. This is not a scheme of work and must be used in conjunction with our school maths policy and curriculum documents.
This policy sets out the progression of strategies and written methods which children will be taught as they develop in their understanding of the

four operations. Strategies are set out in a Concrete, Pictorial, Abstract (CPA) approach to develop children's deep understanding and mastery of mathematical concepts. Children use concrete objects to help them make sense of the concept or problem; this could be anything from real or plastic fruit, to straws, counters or cubes. This is then developed through the use of images, models and children's own pictorial representations before moving on to the abstract mathematics. Children will travel along this continuum again and again, often revisiting previous stages when a concept is extended. It is also worth noting that if a child has moved on from the concrete to the pictorial, it does not mean that the concrete cannot be used alongside the pictorial. Or if a child is working in the abstract, 'proving' something or 'working out' could involve use of the concrete or pictorial.

Similarly, although the strategies are taught in a progressive sequence, they are designed to equip children with a 'tool box' of skills and strategies that they can apply to solve problems in a range of contexts. So as a new strategy is taught it does not necessarily supersede the previous, but builds on prior learning to enable children to have a variety of tools to select from. As children become increasingly independent, they will be able to and must be encouraged to select those strategies which are most efficient for the task.
The strategies are separated into the 4 operations for ease of reference. However, it is intended that addition and subtraction, and multiplication and division will be taught together to ensure that children are making connections and seeing relationships in their mathematics. Therefore, some strategies will be taught simultaneously, for example, counting on (addition) and counting back (subtraction).
Children should be moved through the strategies at a pace appropriate to their age related expectations as defined in the EYFS and NC.
Effective teaching of the strategies rely on increasing levels of number sense, fluency and ability to reason mathematically. Children must be supported to gain depth of understanding within the strategy through the CPA approach and not learn strategies as a procedure.

Teaching equality

It is important that when teaching the 4 operations that equality (=) is also taught appropriately. Misconceptions that = means that children must 'do something' and that it indicates that an answer is needed are common and must be addressed early on. Teachers should present children with number sentences and problems which place the = sign in different positions, different context and include missing box problems . For example, ?+4=7; 7=3+?; <, >, or = 5+6 7+4. In the concrete phase scales and Numicon provide a useful resource to demonstrate equality.

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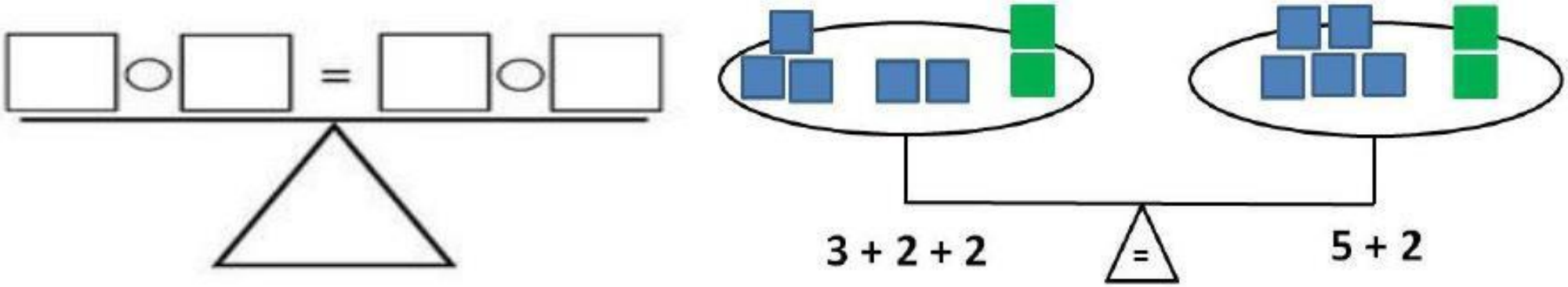
Pictorial representations of equality can be used as shown below:



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End of year expectations for calculations.

Three and four year olds	Children in Reception
• 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. • 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'. • 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'. • Understand position through words alone – for example, "The bag is under the table," – with no pointing. • Describe a familiar route. • Discuss routes and locations, using words like 'in front of' and 'behind'. • Make comparisons between objects relating to size, length, weight and capacity.	• Count objects, actions and sounds. • Subitise. • Link the number symbol (numeral) with its cardinal number value. • Count beyond ten. • Compare numbers. • Understand the 'one more than/one less than' relationship between consecutive numbers. • Explore the composition of numbers to 10. • Automatically recall number bonds for numbers 0-5 and some to 10. • 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. • Continue, copy and create repeating patterns. • Compare length, weight and capacity.

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• **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.** • **Talk about and identifies 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..**	

Termly expectations

Autumn A	Autumn B	KEY VOCAB	Spring A	Spring B	KEY VOCAB	Summer A	Summer B	KEY VOCAB
Count objects, actions and sounds. **•Count beyond ten.** **•Select, rotate and manipulate shapes to develop spatial reasoning skills.** **•Continue, copy and create repeating patterns.**	**•Count objects, actions and sounds.** **•Count beyond ten.** **•Select, rotate and manipulate shapes to develop spatial reasoning skills.** **•Continue, copy and create repeating patterns**	**Odd, even,** **Square, circle, rectangle, triangle** **Cuboid, cube, sphere, pyramid** **Sides, corners, straight, flat, round**	**•Subitise.** **•Compare numbers.** **•Link the number symbol (numeral) with its cardinal number value.** **•Explore the composition of numbers**	**•Subitise.** **•Compare numbers.** **•Link the number symbol (numeral) with its cardinal number value.** **•Explore the composition of numbers**	**Addition, add, altogether, put together, sum, and, plus, total** **Equals, equal to, makes** **More than, less than, fewer, most, least** **Distance between,**	**•Understand the 'one more than/one less than' relationship between consecutive numbers.** **•Automatically recall number bonds for numbers 0-5 and some to 10.** **•Compose and decompose shapes so that children recognise a shape can have other shapes**	**•Understand the 'one more than/one less than' relationship between consecutive numbers.** **•Automatically recall number bonds for numbers 0-5 and some to 10.** **•Compose and decompose shapes so that children recognise a shape can have other shapes**	**Addition, add, altogether, put together, sum, and, plus, total** **Equals, equal to, makes** **more than, less than, fewer, most, least** **long/short, longer/shorter, tall/short** **Heavy, light, heavier**

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					difference between **Double, half**	**within it, just as numbers can.** **•Compare length, weight and capacity.**	**within it, just as numbers can.** **•Compare length, weight and capacity.**	**than/lighter than, full/empty, more than/less than, half, full**

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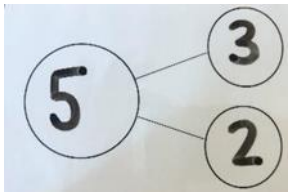
27Progression in Calculations

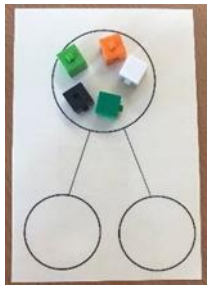
Addition

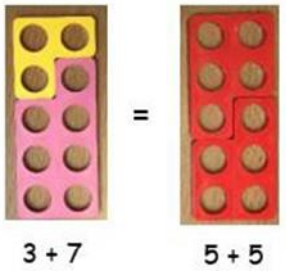
Nursery
Before addition can be introduced, children need to have a secure knowledge of number. In Nursery, children are introduced to the concept of counting, number order and number recognition through practical activities and games. This is taught through child initiated games such as hide and seek and I spy. Children also learn how to count 1-1 (pointing to each object as they count) and that anything can be counted, for example, claps, steps and jumps. This is reinforced by opportunities provided in the outdoor area for the children to count e.g. counting building blocks, twigs etc.

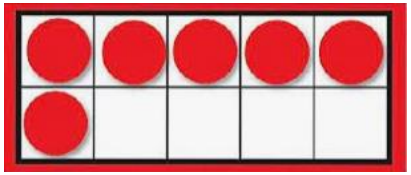
Reception
Before addition can be introduced, children in Reception build on concepts taught in Nursery objectives. Children need to have a secure knowledge of number in order to begin addition. Children are then introduced to the concept of addition through practical games and activities. Children act out addition sums to physically add two groups of objects together and use arm gestures to represent the signs + and =.
This is reinforced by opportunities provided in the outdoor area for the children to use addition e.g. adding together groups of building blocks, twigs etc. Children build on their previous knowledge of 'more' by learning that adding two groups of objects together gives them a larger number (more objects). Adults model addition vocabulary supported by age appropriate definition. An example of this is "addition means we add two groups together / we put 2 lots of objects together. Equals means we find out how many we have got altogether. 3 add 2 equals 5. We have got 5 altogether". Adults support children in recording their addition sums in the written form on whiteboards.

Strategies/methods to be taught by the end of the summer term:









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Progression in Calculations

Subtraction

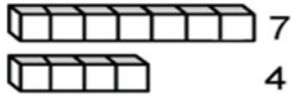
Nursery

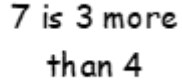
Before subtraction can be introduced, children need to have a secure knowledge of number. In Nursery, children are introduced to the concept of counting backwards. This is taught through child initiated games indoors and outdoors such as acting out counting songs and running races (children shouting “5,4,3,2,1,0 - GO!”).

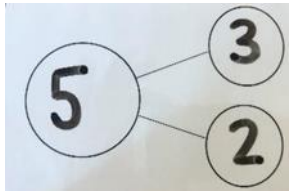
Reception

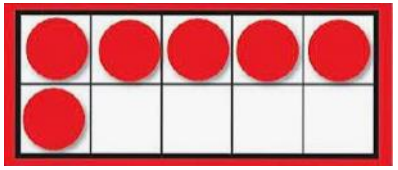
Before subtraction can be introduced, children in Reception build on concepts taught in Nursery. Children need to have a secure knowledge of number in order to begin subtraction. Children are then introduced to the concept of subtraction through practical games and activities. Children act out subtractions to physically subtract a number of objects from a group. This is reinforced by opportunities provided in the outdoor area for the children to count e.g. counting building blocks, twigs etc. Children build on their previous knowledge by learning that subtracting means taking away a certain number of objects from a group (leaving them with fewer objects). Adults model subtraction vocabulary supported by age appropriate definition. An example of this is “subtraction means we take away objects from a group / we have 11 fewer objects now. Equals means we find out how many we have got left. Wow! We have only got 3 left!” Adults support children in recording their subtractions in the written form on whiteboards.

Strategies/methods to be taught by the end of the summer term:









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Multiplication & Division

Nursery and Reception

By the end of Reception, children are expected to understand:

- The composition of numbers to 10
- The recall of numberbonds 0-5 and then to 10 – including doubling facts
- Odd and even – doubling facts and how quantities can be distributed equally

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