Mathematics through the Early Years at St Mary's

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 relationship between them and the patterns within those numbers.

Nursery

By the end of their time in Nursery, children will be developing St Mary's Big ideas in mathematics such as **fluency skills** by learning basic maths skills**,** beginning to **problem solve** and to **reason** through exploring their learning environment both indoors and outdoors during child initiated play, through questioning and by adult focus activities.

Learning environment

The nursery has a mathematics area with a wide variety of mathematical resources and this area is enhanced each day depending on the Maths focus for that day/week. There are also Maths resources/opportunities in all areas of learning within the classroom and also outdoors.

Questioning

Children are asked closed and open mathematical questions during child initiated learning and also during Maths adult focus activities.

Adult focus activities

Each week there is a focus on a specific mathematical concept such as counting, number recognition or shape in order to develop the children's **fluency** in Maths. The mathematical concept will be introduced and reinforced in an adult focus activity and enhancements will be set up in the environment to practice these mathematical skills further.

Problem solving

Children are encouraged to solve problems in everyday life and through child initiated play through questioning and by extending the child's ideas and play.

Reasoning

Adults model **reasoning** by explaining their mathematical ideas and encourage the children to explain their own ideas.

By the end of their time in nursery most children will have learned to:

- Recognise up to 3 objects without having to count them ('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, 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 the language of 'more than' and 'fewer than'
- Talk about and explore 2D and 3D shapes such as circles, rectangles and cuboids using informal and mathematical language such as 'sides' 'corners' 'straight' 'flat' 'round'
- Understand position through words alone such as 2The bag is under the table.'
- Describe a familiar route.
- Make comparisons between objects relating to size, length, weight and capacity.
- Select shapes appropriately: flat shapes for building, a triangular prism for a roof, etc
- Combine shapes to make new ones-an arch, a bigger triangle, etc
- 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
- 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 'first', 'then…'

Reception

In Reception, we build on the children's mathematical awareness that they have gained in Nursery through adult focus activities, enhancements in the learning environment and by adult questioning. We use the 'Ark Mastery' programme to teach and learn about numbers to 10 and beyond and to learn about shape, space and measures. We have a mathematics area with a wide range of resources to promote mathematical learning and mathematical opportunities/resources in all areas of learning both inside and outside the classroom. Adult focus sessions, group activities and child-initiated learning further develop the children's **fluency** in maths and ability to **solve problems.** The children's **reasoning skills** in maths is further developed and extended through talking to the children and encouraging them to explain their mathematical ideas.

Mastery in Reception

We have daily whole class adult focus lessons. Children then practise the concepts taught in the whole class maths session in groups and during child-initiated learning within the enhanced provision in the classroom. Children can then explore mathematical concepts in different ways and demonstrate their understanding through our rich mathematical environment. Staff support the children who need extra input in certain mathematical concepts during child-initiated learning by applying the concept to the child's interests. For example, a child who needs extra support in counting one to one and is playing with the farm in the small world area can be encouraged to count the animals into their pens. We extend more able children through challenging them and questioning them in their play. E.g. An exceeding child last year could pay for his snack in many ways using coins of different values.

Throughout their time in Reception children will have had opportunities to:

- Count objects, actions and sounds.
- Subitise (recognise how many without counting a small number of objects)
- Link the number symbol (numeral) with its cardinal number value.
- Count beyond ten.
- Compare numbers.
- Understand the 'one more/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.

By the end of the reception year, most children will be able to:

- 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.
- 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.