

Mathematics

Curriculum Intent

Mathematics is a creative and highly interconnected 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 National Curriculum 2014)

In line with the National Curriculum Objectives for Mathematics, our intent is that all pupils:

- become **fluent** in the fundamentals of Mathematics, including through **varied and frequent** practice with increasingly complex problems over time, so that pupils **develop conceptual understanding** and the ability to **recall and apply** knowledge **rapidly and accurately**
- **reason mathematically** by following a line of enquiry, conjecturing relationships and generalisations, and developing an argument, justification or proof using **mathematical language**
- can **solve problems** by **applying** their mathematics to a **variety of routine and non-routine problems** with increasing sophistication, including breaking down problems into a series of simpler steps and **persevering** in seeking solutions

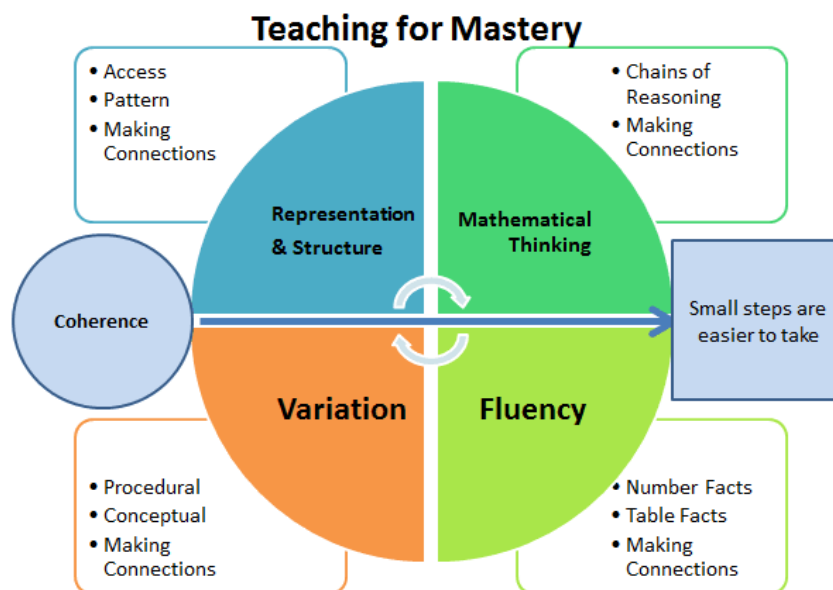
Mathematics makes a significant contribution to modern society and at St Mary's, we consider it to be vital for the life opportunities of our children. We strive to enable fascination and excitement to discover mathematical concepts and to broaden pupils' knowledge and understanding of how mathematics is used in the wider world.

We ensure children have transferable mathematical skills, the ability to reason and solve problems, and a well-developed vocabulary. We believe that the language of Mathematics is international, the subject transcends cultural boundaries and its importance is universally recognised. We therefore use this in our approach to ensure that compassion and empathy is being taught. We provide pupils with the opportunity to explore Mathematics using a range of concrete, abstract and pictorial resources.

The basis of our Mathematics lessons is solving problems using numerical fluency. We hope children experience a sense of awe and wonder as they solve a problem for the first time, discover a more efficient method of calculation and make links between different areas of Mathematics. They practise different elements of problems solving through whole class investigations, working together, showing collaboration. We ensure that children leave primary School with a logical and creative number fluency ability and with an ability to recall key number facts such as multiplication tables. We know that this is the strongest foundation we can give our children as their use of Mathematics becomes more sophisticated.

We strive to ensure children are curious, ask questions and ultimately enjoy their maths lessons. Skills for learning are a high priority. For example being able to explain ideas and respond to feedback from teachers and peers are crucial to our curriculum. Being confident, resilient, able to persevere and show determination is at the core of what we want to achieve. After all, mathematics helps us to understand and change the world.

Central to our approach are the **5 Big Ideas** which underpin mastery in Mathematics.



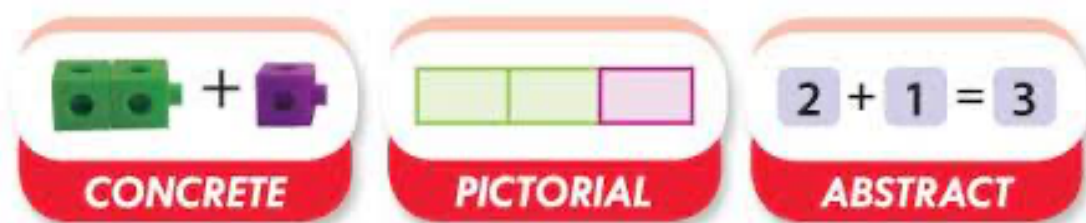
We expect and encourage all children to use mathematical language to describe, discuss, examine, explain, justify and synthesize.

Curriculum Implementation

At St Mary's children study mathematics daily following our Scheme of Learning. Staff have access to White Rose Maths which they use as a resource to support our scheme of work. The blocked nature of our learning allows for depth and breadth of learning within each strand of Mathematics.

Concrete, Pictorial and Abstract Learning:

Children engage with a wide and varied range of concrete manipulatives, pictorial representations and abstract methodologies within each session. **Cohesive** use of Concrete, Pictorial and Abstract is a fundamental part of mastery in Mathematics for all learners, not just those pupils with Special Educational Needs. Concrete and pictorial references scaffold and strengthen understanding and are widely used as a teaching and learning tool from Foundation Stage to Year Six.



Fluency, Reasoning and Problem Solving:

Every lesson includes the opportunity to develop fluency skills, build on reasoning using relevant knowledge alongside relevant terminology and solve increasingly complex problems in a systematic

and coherent way. With each of these the children need to make decisions about whether it can be solved mentally, or with informal jottings, or if there is a need for a formal written method. Formal written method should not be the pupils' first port of call.

Mathematical Vocabulary:

In all lessons, explicit reference is made to vital mathematical vocabulary and stem sentences are used to support and encourage all children to communicate their ideas with mathematical precision and clarity. These sentence structures often express key conceptual ideas or generalities and provide a framework to embed conceptual knowledge and build understanding.

Fluent Recall:

To develop pupils' mental maths, there is great importance placed on the teaching of key number facts to allow and the opportunity for these to be practised to develop the speed and accuracy of their recall. Lessons starters are particularly used for this purpose. In addition, the school promotes and uses two other key resources.

Timestables: We are committed to ensuring that pupils secure their knowledge of Times Tables and Related Divisional Facts by the end of Year 4. In addition, the speed of recall of these facts is equally important and so our emphasis on these skills does not cease at Year 4. Pupils are encouraged to regularly use the challenges and competitions on Times Tables Rock Stars to practise fluent recall.



Numeracy Passports

This initiative starts in Reception and runs all the way up to Year 6. Our aim is to equip children with strategies to instantly recall basic number facts. The 'Numeracy Passport' was originally designed by Ray Maher, an independent Maths consultant, and has been used successfully to improve attainment in Mathematics in many primary schools nationally. At St Mary and All Saints, we have adapted the passport to provide further challenge for our pupils. Class teachers work with the children once a week to assess their progress against their targets.



EYFS

At St Mary's, we understand the importance of early experiences of maths, and are committed to delivering a high-quality curriculum within our Early Years setting.

We place a significant emphasis on developing a strong grounding in number – understanding that this is a necessary building block for children to excel in the subject.

The two key ELG's for mathematics are:

1. Number: Number composition, subitising, recall of bonds to 5 and 10 and doubling
2. Numerical Pattern: Verbally count beyond 20, Compare quantities, explore and represent patterns

Staff provide creative and engaging opportunities for children to ignite their curiosity and enthusiasm for the subject, while focusing on the three prime areas of: Communication and Language, Physical Development and PSED.

Activities and experiences are frequent and varied, and allow children to build on and apply understanding of Numbers to 10. Concrete manipulatives are a key focus within sessions, as is the use of pictorial representations including Tens Frames and Part/Whole Models.

Children are actively encouraged to use mathematical terminology within their understanding, with a focus on developing positive attitudes and interest in the subject.

Curriculum Impact

The impact of our Mathematics curriculum is that children understand the relevance and importance of what they are learning in relation to real world concepts. Children know that Maths is a vital life skill that they will rely on in many areas of their daily life. Children have a positive view of maths due to learning in an environment where maths is promoted as being an exciting and enjoyable subject in which they can investigate and ask questions; they know that it is reasonable to make mistakes because this can strengthen their learning through the journey to finding an answer. Children are confident to 'have a go' and choose the equipment they need to help them to learn along with the strategies they think are best suited to each problem. Our children have a good understanding of their strengths and targets for development in maths and what they need to do to improve. Our Maths books evidence work of a high standard of which children clearly take pride; the components of the teaching sequences demonstrate good coverage of fluency, reasoning and problem solving. Our feedback and interventions support children to strive to be the best mathematicians they can be, ensuring a high proportion of children are on track or above. Our school standards are high, we moderate our books both internally and externally and children are achieving well.