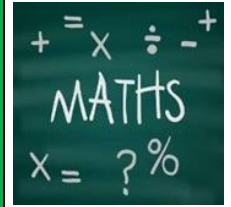


Mathematics at St Monica's School



"Good mathematics is not about how many answers you know... it's about how you behave when you don't know."

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 many 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. **National curriculum 2014**

Implementation

During EYFS at St Monica's School

Mathematics involves developing a strong grounding in number 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.

During Key Stage 1 at St Monica's School

The principal focus of mathematics teaching in KS1 is to ensure that pupils develop confidence and mental fluency with whole numbers, counting and place value. This should involve working with numerals, words and the four operations, including with practical resources. We focus on the CPA (Concrete/Pictorial/Abstract) approach:

- **Concrete** - Children have the opportunity to work with physical objects/concrete resources, in order to bring the maths to life and to build understanding of what they are doing.
- **Pictorial** - Alongside concrete resources, children work with pictorial representations, making links to the concrete. Visualising a problem in this way can help children to reason and to solve mathematical problems.
- **Abstract** - With the support of both the concrete and pictorial representations, children can develop their understanding of abstract methods.

At KS1, pupils should develop their ability to recognise, describe, draw, compare and sort different shapes and use the related vocabulary. Teaching will involve using a range of measures to describe and compare different quantities such as length, mass, capacity/volume, time and money.

By the end of year 2, pupils should know the number bonds to 20 and be precise in using and understanding place value. They should know multiplication and division facts for the 2, 5 and 10 times tables. An emphasis on practice at this early stage will aid fluency. Children are encouraged to use the correct mathematical vocabulary and become confident at using it when answering questions and discussing their work.

During Key Stage 2 at St Monica's School

Lower KS2: Year 3 and Year 4

The principal focus of mathematics teaching in lower KS2 is to ensure that pupils become increasingly fluent with whole numbers and the four operations, including number facts and the concept of place value. At this stage, pupils should develop their ability to solve a range of problems, including with simple fractions and decimal place value. Teaching will ensure that pupils draw with increasing accuracy and develop mathematical reasoning so they can analyse shapes and their properties, and confidently describe the relationships between them.

By the end of Year 4, pupils should know their multiplication tables up to and including the 12-multiplication table and show precision and fluency in their work.

Children should continue to use the correct mathematical vocabulary and become confident at using it when answering questions and discussing their work.

During Key Stage 2 at St Monica's School

Upper KS2: Year 5 and Year 6

The principal focus of mathematics teaching in upper KS2 is to ensure that pupils extend their understanding of the number system and place value to include larger integers. At this stage, pupils will develop their ability to solve a wider range of problems, including increasingly complex properties of numbers and arithmetic, and problems demanding efficient written and mental methods of calculation. Teaching in geometry and measures should consolidate and extend knowledge developed in number. Teaching should also ensure that pupils classify shapes with increasingly complex geometric properties and that they learn the vocabulary they need to describe them.

By the end of Year 6, pupils should be fluent in written methods for all four operations, and in working with fractions, decimals and percentages. Children should continue to use the correct mathematical vocabulary and become confident at using it when answering questions and discussing their work.

Planning

- The school's curriculum maps show the units/blocks to be covered each term.
- There is a White Rose medium-term plan for each unit/block of work.
- Lessons are planned/adapted so that all children can access the lesson and deepen their mathematical knowledge and reasoning skills.
- Year 1 to Year 6 follow the White Rose Math planning.
- Early Years follow the White Rose planning materials. They use the statutory EYFS framework and also the Birth to 5 Matters document as guidance to support children to make progress towards the Early Learning Goals.

Teaching

- Whole class mathematics is taught at St Monica's School from Year 1 to Year 6. In the Early Years, there is a combination of whole class teaching and small group adult led activities.
- Flexible groupings are used during lessons: ability and mixed ability groups, paired work, guided and independent work and whole class work.
- Children will be expected to complete tasks/ activities that range from fluency to reasoning.
- We want children to develop their conceptual understanding, be fluent, reason and be able to solve routine and non-routine problems.
- Children in all classes have access to concrete manipulatives to support the CPA approach.
- We also encourage drawings, including the use of bar models. This CPA approach is proven to be very effective way of supporting mastery and helping children to know and understand more and remember more in the long term.
- Children are given the opportunity to learn mathematics practically to help develop mathematical conceptual understanding.
- Opportunities are given in lessons to learning and developing understanding of maths vocabulary and definitions.
- A range of manipulatives and resources are used to enhance learning including Numicon, dienes, place value counters, 2D & 3D shapes.
- Relevant vocabulary is explicitly taught, evident in the classroom on working walls and used in discussion and reasoning.

Marking and feedback

Work should be marked according to the school marking policy by using:

- Peer and self-assessment
- Oral feedback
- Written feedback

Impact

Mathematicians at St Monica's:

- are happy pupils who talk enthusiastically about their learning.
- can solve problems by applying their mathematics knowledge to a variety of problems; they break down problems into smaller steps and persevere to seek solutions.
- demonstrate fluency in the fundamentals of maths through varied practice.
- apply mathematical language accurately during class/pupil discussions.

Assessment

- AFL is used within each lesson to establish next steps for pupils.
- White Rose assessments are used at the end of each topic.
- White Rose end of block assessments are used at the end of each term.
- In Years 3-5 and at the beginning of the year in year 6, children have twice weekly multiplication tests to aid fluency and rapid recall of the tables.
- SATs testing in Year 2 (optional) and Year 6
- MTC (Multiplication Tables Check) at the end of Year 4.
- Reception Baseline Test at the beginning of the year.
- In Years 2-6, Star Assessments are used at the end of each term to track children's progress in Mathematics.

EYFS:

- Teachers and NNEB's make observations regarding the pupils' development in this subject.

Resourcing and display

Working wall:

Displays are kept up to date and relevant to the unit/block that is being taught. Displays include key vocabulary,

methods and concepts that are being taught in maths.

Resources:

Key resources are stored in classes. Depending on classroom space, classrooms have either a maths table where resources are easily accessible, or resources are placed centrally on all tables during lessons. Children are encouraged to be independent in getting and using the necessary resources.

Monitoring

Monitoring is undertaken by the maths subject leader and SLT during the school year. This will include:

- Learning walks
- Book looks
- Pupil interviews