Mathematics at Ramsbury School

At Ramsbury School we believe that mathematics provides pupils with a powerful set of tools to understand and change the world. Mathematics is necessary to achieve seemingly impossible feats such as landing on the moon or building the Burj Khalifa. It provides children with the understanding to think critically about the world around them and the reasoning skills to solve problems across the curriculum and in the wider world. Mathematics is important in everyday life and helps to develop key mindsets such as economic wellbeing.

Intent

Our intent for mathematics is to ensure that all pupils become fluent in the fundamentals of mathematics, reason mathematically by following a line of enquiry, and solve problems by applying their mathematics to a variety of routine and non-routine problems. Pupils will develop conceptual understanding and the ability to recall and apply knowledge rapidly and accurately.

We use a mastery approach so our expectation is that the majority of pupils will move through their learning at broadly the same pace. Pupils who grasp concepts quickly will be challenged through the use of rich problems rather than learning new content. Cross curricular links will be integrated where appropriate and will most commonly be used in subjects such as science, computing and geography.

It is vital that children are confident in mathematics and our use of mistakes as part of the learning process supports the development of such confidence. A balance between fluency, reasoning and problem solving helps to develop confidence in girls, who can find fast-paced closed questioning off-putting. We study female mathematicians when looking at women who have changed the world.

Implementation

We use a mastery approach for mathematics, with all children taught through whole-class interactive teaching, where the focus is on all pupils working together on the same lesson content at the same time. This ensures that all can master concepts before moving to the next part of the curriculum sequence. Lesson design identifies the new mathematics that is to be taught, the key points, the difficult points and a carefully sequenced journey through the learning. A typical lesson will include questioning, short tasks, explanation, demonstration, and discussion. Stem sentences, as well as concrete resources and images will be used to highlight structures and relationships. Significant time is spent developing deep knowledge of the key ideas that are needed to underpin future learning. The structure and connections within the mathematics are emphasised, so that pupils develop deep learning that can be sustained. Key facts such as multiplication tables and addition facts within 10 are learnt to automaticity to avoid cognitive overload in the working memory and enable pupils to focus on new concepts.

There is a balance between the key National Curriculum aims of fluency, problem solving and reasoning and resources such as White Rose Maths, Number Sense Maths and the Non-statutory Guidance for the National Curriculum materials are used to support this.

In Key Stage 1, the focus of mathematics teaching is to ensure that pupils develop confidence and mental fluency with whole numbers, counting and place value. The NCETM Mastering Number programme and Number Sense Maths Early Years Number Sense are used to develop such understanding in Reception, whilst Number Sense Maths Number Facts Fluency is used in Year 1, Year 2 and at the start of Year 3. In Years 3 and 4, the focus is to ensure that pupils become increasingly fluent with whole numbers and the four operations, including number facts and the concept of place value. Pupils develop efficient written and mental methods and perform calculations accurately with increasingly large whole numbers. Years 3 and 4 use Number Sense Maths Times Table Fluency to support the learning of multiplication tables and by the end of year 4,

pupils should have memorised their multiplication tables up to and including the 9 multiplication table so that these facts can easily be applied to increasingly complex calculations in Years 5 and 6. The principal focus of mathematics teaching in Years 5 and 6 is to ensure that pupils retain their multiplication fact knowledge and develop their understanding of larger integers and make connections between multiplication and division with fractions, decimals, percentages and ratio.

In geometry, pupils develop their ability to recognise, describe, draw, compare and classify shapes with increasingly complex properties, using the related vocabulary. Pupils learn to use measuring instruments for length, mass, volume, time and temperature with accuracy and make connections between measure and number, including through the use of money.

Impact

At Ramsbury School we recognise the importance of establishing a secure foundation in mental calculation and recall of number facts before standard written methods are introduced. Our calculation policy reflects this progression. We use correct mathematical vocabulary from the relevant year group when planning and pupils are expected to use this terminology in their verbal and written explanations. Pupils are given opportunities to apply and use mathematics across the curriculum and in real contexts when possible.

Regular and ongoing assessment informs teaching, as well as intervention, to support and enable the success of each child. Tasks to promote deeper understanding are provided for pupils who rapidly grasp new concepts. Pre-teaching and the use of concrete resources and stem sentences support the learning of children who have not yet mastered a concept. Pupils are encouraged to talk about mathematics, both to develop their use of vocabulary and understanding, as well as to provide opportunities for pupils who find recording difficult.