Maths at Bearwood Primary and Nursery School

Why study maths?
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. At BPNS, we believe that maths is not taught as a rule bound passive approach but where active learning promotes talking through and explaining maths.

Aims
The national curriculum for mathematics aims to ensure 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 have conceptual understanding and are able to recall and apply their knowledge rapidly and accurately to problems

- **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 is an interconnected subject in which pupils need to be able to move fluently between representations of mathematical ideas (so that pupils have a sense of living maths in a real life context). The programmes of study are, by necessity, organised into apparently distinct domains, but pupils should make rich connections across mathematical ideas to develop *fluency, mathematical reasoning and competence in solving increasingly sophisticated problems*. They should also apply their mathematical knowledge to science and other subjects.

The expectation is that *the majority of pupils will move through the programmes of study at broadly the same pace*. However, decisions about when to progress should always be based on the security of pupils' understanding and their readiness to progress to the next stage. Pupils who grasp concepts rapidly should be challenged through being offered rich and sophisticated problems before any acceleration through new content. Those who are not sufficiently fluent with earlier material should consolidate their understanding, including through additional practice, before moving on.

What will your child be taught in the Early Years?
Work undertaken within the Foundation Stage is guided by the requirements and recommendations set out in the Early Years 'Development Matters' EYFS document. All children are given ample opportunity to develop their understanding of mathematics. Lessons in the Early Years aim to do this through varied activities that allow children to use, enjoy, explore, practise and talk confidently about mathematics.

What will your child be taught in Key Stage 1?
The principal focus of mathematics teaching in key stage 1 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 (e.g. concrete objects and measuring tools).
At this stage, pupils should develop their ability to recognise, describe, draw, compare and sort different shapes and use the related vocabulary. Teaching should also 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. An emphasis on practice at this early stage will aid fluency.
Pupils should read and spell mathematical vocabulary, at a level consistent with their increasing word reading and spelling knowledge at key stage 1.

What will your child be taught in lower Key Stage 2?
The principal focus of mathematics teaching in lower key stage 2 is to ensure that pupils become increasingly fluent with whole numbers and the four operations, including number facts and the concept of place value. This should ensure that pupils develop efficient written and mental methods and perform calculations accurately with increasingly large whole numbers.
At this stage, pupils should develop their ability to solve a range of problems, including with simple fractions and decimal place value. Teaching should also 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. It should ensure that they can use measuring instruments with accuracy and make connections between measure and number.
By the end of year 4, pupils should have memorised their multiplication tables up to and including the 12 multiplication table and show precision and fluency in their work.
Pupils should read and spell mathematical vocabulary correctly and confidently, using their growing word reading knowledge and their knowledge of spelling.

What will your child be taught in upper Key Stage 2?
The principal focus of mathematics teaching in upper key stage 2 is to ensure that pupils extend their understanding of the number system and place value to include larger integers. This should develop the connections that pupils make between multiplication and division with fractions, decimals, percentages and ratio.
At this stage, pupils should 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. With this foundation in arithmetic, pupils are introduced to the language of algebra as a means for solving a variety of problems.
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, including long multiplication and division, and in working with fractions, decimals and percentages.
Pupils should read, spell and pronounce mathematical vocabulary correctly.

What will lessons include?
Mathematics planning at Bearwood allows for the three aims of knowledge, reasoning and problem solving to be incorporated in every lesson. Planning will allow for children begin their learning journey before the lesson begins as teachers will have previously assessed children in order to place them at the correct starting put. Lessons usually begin with open ended thinking activities to warm them up before encountering the review stage, however lessons can change according to different learning styles. Lessons will then include knowledge, reasoning and problem solving activities, including, where necessary, the outside environment. Opportunities will be planned for and implemented throughout the lessons to ensure and develop children's understanding further and allow for the progression through activities to develop at the appropriate pace for each individual child.

Higher order questioning (Bloom's taxonomy), is the key to success in all our mathematics sessions and questions will be continuously adapted by the teacher and support staff based on assessment for learning.

Mental maths should be incorporated throughout all lessons and mental strategies for solving all mathematical concepts will be discussed and developed based on continuous assessment for learning.

How can you help your child with maths?
There are so many rich and varied opportunities to interact with mathematical ideas and concepts in the world around us, but often as adults, we forget this. Simple things like talking to your children about the days of the week, months and seasons, discussing money and time and looking at patterns in nature and the environment are all great examples of how you can help your child with maths at home.
Additionally, practising mental maths at home, such as quick fire times table questions and encouraging your child to play for short periods on apps such as Times Table Rockstars and Mathletics can help them to improve their mental arithmetic skills.