

Subject Leader: Mrs Gallon

"Mathematics is, in its way, the poetry of logical ideas" Albert Einstein.

At Newton Hall Infants' School, we believe that the teaching of mathematics should equip children with the strategies, knowledge and mathematical language to help them to understand and make sense of the world around them.

Mathematics is integral in everyday life and with this in mind we endeavour to ensure that our children develop a healthy and enthusiastic attitude towards mathematics, which will stay with them and make them confident lifelong learners.

Mathematics is a whole network of concepts and relationships, which children learn to use to and communicate to tackle a range of practical tasks and real life problems. Our aim is that all of our children become **independent learners**, who can apply logical reasoning, problem solving skills and the ability to think in abstract ways. Mathematics teaching and learning at Newton Hall Infant School, is not confined to 'Maths lessons', instead links are established across a range of subject areas to support the understanding that Maths is real!

Our approach to the curriculum in mathematics is based upon a mastery curriculum which is language rich, involving active learning experiences. We believe that children learn best if they are exposed to new concepts with hands on practise and immersion in new technical vocabulary. Our children are taught mathematical knowledge through the support of concrete resources and pictorial representations, before moving on to a more abstract approach. We ensure that they have a firm grasp of the four key calculations, (addition, subtraction, division and multiplication), so that by year 2 children are confident with abstract learning and problem solving. We use the CPA (concrete, pictorial, abstract) approach in our teaching of Mathematics.

Concrete

Children use practical equipment e.g. Numicon, counting bears and counters to gain a solid understanding of mathematical concepts, making links with new learning and developing analytical thinking for problem solving. Across school every new concept in mathematics is taught practically and in real contexts first, to support understanding and deepen learning.

Pictorial

When children are ready they replace concrete apparatus with a pictorial representation - essentially a drawing or picture which still provides them with a

support to access their learning. This is sometimes used directly alongside the concrete resources to aid understanding.

Abstract

Once children really understand the concept, they can then move into the abstract - using numbers and symbols and formal written methods, as well as developing their mental recall.

At the point in which children are secure with their fluency in areas of the mathematics curriculum - their thinking is challenged and extended through open ended, high order questioning and problem solving activities, as well as variation in how problems and questions are presented.

How is the content / theme chosen?

The content is chosen to ensure coverage of the knowledge, skills and expectations, as set out in the National Curriculum programmes of study, as well as the EYFS framework. Content may be linked to teaching and learning in other subject areas, such as science. The content may be adapted or changed, based upon the needs of specific cohorts.

How do we ensure progression of knowledge and skills?

At Newton Hall Infants School, we have in place tracking documents to ensure children make progress and identify those who may need additional support. Skills are progressive and reference to the Ready to progress criteria ensures skills are mastered before moving on. Alongside this, we use the recently produced Department for Education materials, (Teaching Mathematics in Primary Schools Guidance, July 2020) and the Primary Stars for mathematics, to ensure that key learning and understanding has taken place by the end of a specific year group, ensuring children are then ready to extend and deepen their knowledge in subsequent years. Aside from these documents, teachers will plan activities and opportunities for challenge, in order to meet the needs of all learners.

How is the subject taught?

In Key Stage 1, the school follows a mastery approach using the Rising Stars Maths scheme. This follows the same small steps and principles as the White Rose scheme of work. Activities and resources are also used from White Rose to supplement this where necessary. Planning is reactive, particularly over the last year. Identifying gaps in learning is essential and teachers use their professional judgement to adapt planning, as and when gaps in learning become evident. The importance of mastering basic skills has been a priority for us and will continue to be. Teachers use resources which best meets the needs of the children.

At Newton Hall Infants we recognise the importance of "active learning" and this is embedded within the Maths curriculum. All children participate in at least one Maths of the Day lesson a week. This allows the children to work collaboratively, develop their problem solving skills and use mathematical vocabulary in discussions.



Within each daily lesson or weekly overview, class teachers carefully plan the specific outcomes for their year group, based upon age appropriate knowledge and skills, as well as the needs of the cohort or individuals within it. There is a strong focus on basic skills and knowledge acquisition during lessons.

Each lesson begins with a recap of prior learning. Key mathematical vocabulary is then reinforced or introduced as a further opportunity to ensure that children have learnt and remembered what has previously been taught.

Questioning is used to check their understanding, prior knowledge and address key misconceptions, before new concepts or skills are introduced.

Modelling is used by class teachers to clarify expectations, children are then given plentiful opportunities to consolidate, build upon and apply basic skills in through fluency practise (including variation of questions and activities). The teacher skilfully removes any scaffolds, which have supported the children's initial understanding, when they are ready, before ensuring time for independent practise.

Children are taught how to reason and this becomes an expectation throughout their mathematics learning. Problem solving opportunities are interwoven throughout mathematics lessons, as well as other daily opportunities, so that children can apply the knowledge and skills that they have learnt.

In Key Stage 1 (KS1) the use of "Maths Journey" walls show children what they are working towards and the steps they must master along the way.

Maths is taught daily in school through discrete lessons. However, it is also reinforced across other subject areas where appropriate links are made, so that children can continue to embed and apply their knowledge. Each day, within lessons and through daily routines, there are opportunities to revisit key concepts and knowledge, e.g. number bonds to ten, in order to ensure that children remember and learn these concepts effectively.

How is maths taught in Early Years Foundation Stage (EYFS)?

There is strong subject knowledge in EYFS, where children spend time exploring, acquiring and reinforcing the basic concepts, before being offered challenging opportunities to work beyond the early learning goals. Our intent for mathematics in the early years is that children have a deep understanding of the number system, first to 5 and then to 10 in order to prepare them for Key Stage 1.

Children in EYFS learn how to subitise and build the foundations to progress into a mastery curriculum. They learn about a range of representations and there is a strong focus on mathematical language development.

We have an EYFS curriculum that moves from practical concrete opportunities into pictorial and abstract calculations when children are ready for this. Children are exposed early on to key concepts such as place value and number bonds, so that they have a good basis from which to work from in Key Stage 1.

Maths is taught daily as part of a focus, discrete teaching activity in EYFS. Children are then provided with learning activities based upon this teaching, so that they can refine and develop their knowledge and start to apply their skills. In addition to this, opportunities for mathematics teaching and learning are developed through the routines of the school day, e.g. counting how many children are here today.

Mathematics challenges, as well as opportunities to apply skills and embed knowledge, are carefully planned for through the areas of provision in both the indoor and outdoor learning environments.

How do we know that our children are making progress?

Ongoing assessments of the children's knowledge and skills are observed daily by the class teacher. Misconceptions are addressed and next steps carefully planned. Children's outcomes are compared to the subject specific skills and knowledge documents, as well as the year group expectations from the National Curriculum or EYFS Framework. Senior leaders and subject leaders gather an overview of children's learning and outcomes through monitoring activities. Regular assessments are collated for children in EYFS and Key Stage 1 which are used to plan appropriate next steps for their future learning, as well as provide an overview of learning within a subject area across the whole school. Progress is monitored closely by subject leaders and senior management.

Impact of our Mathematics Teaching

Our mathematics curriculum has a clear impact on pupils independence, resilience and problem solving skills. Pupils are confident to try new learning. As a result of this, outcomes at the end of EYFS and KS1 remain above National for all groups of learners and there is a positive impact on progress through each phase. Pupils talk about maths positively and look forward to their maths lessons.

