**Mathematics Policy**



“Do your best. Be your best.”

 October 2023

**Penketh South Primary School and Nursery Mathematics Policy**

# Why Teach Mathematics?

Mathematics is a key life skill. It 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 involves confidence and competence with numbers and measures, an understanding of the number system, a repertoire of computational skills and an ability to reason and problem solve in a variety of contexts. A high-quality mathematics education therefore provides a foundation for understanding of 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.

# Aims of the National Curriculum

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 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 is an interconnected subject in which pupils need to be able to move fluently between representations of mathematical ideas. 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.

(National Curriculum July 2014)

# Our School Aims

Mathematics at Penketh South is taught in a way that enables children to understand that world that we live in and encourage them to understand relationships, patterns and changes in quantity, space, shape and measure through their everyday lives. Our Mathematics curriculum aims to establish a positive learning environment which focuses on three key mathematical concepts: fluency, problem solving and reasoning. Here at Penketh South our aim is:

* to encourage all children to develop an enthusiasm for and a confidence in mathematics
* to help children to understand the importance of developing mathematical skills as an essential part of everyday life
* to provide a rich and challenging learning environment that stimulates mathematical thinking and learning
* to develop children’s ability to use a wide range of mathematical skills and articulate their understanding of concepts with confidence
* to lead children to be able to apply their Mathematics skills and knowledge across the curriculum and in real life situations

# Teaching and Learning

Children are taught mathematics for one hour each day, depending on their age. To ensure consistent coverage, teachers follow the Power Maths scheme of learning to support their planning from Year 1 -6. The children begin their lessons with the ‘power up’ to aid their recall of previous topics covered. 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 are always based on the security of pupil’s understanding of a topic and their readiness to progress to the next stage. Pupils that grasp new concepts and topics rapidly are challenged through being offered rich and sophisticated problem solving and reasoning questions to ensure that they have mastered a concept before moving on. Those who are not sufficiently fluent with earlier material should consolidate their understanding through additional practice, before moving on.

Mathematics teaching and learning at all levels should include opportunities to develop children’s fluency of a concept before moving on to look at applying their understanding in a variety of different contexts. When children are secure in their understanding, they should then have the chance to apply their knowledge to reasoning and problem-solving tasks to show that they have mastered the concept. Teachers can access a variety of sources to provide tasks for fluency, reasoning and problem solving e.g. Power Maths Documents, NRICH tasks, NCTEM Mastery documents. Coverage information about what specific classes are learning is available to view within our ‘Calculation Policies’.

Concrete scaffolding resources should be available for all children to readily access during lessons and children should be aware of their location within the classroom.

Our curriculum builds on the concrete, pictorial, abstract approach. By using all three, the children can explore and demonstrate their mathematical learning. Together, these elements help to cement knowledge so children truly understand what they have learnt. All children have access to a wide range of concrete Mathematical resources to help them build on their concrete understanding of Mathematical concepts.

**Concrete** – children have the opportunity to use concrete objects and manipulatives to help them understand and explain what they are doing.

**Pictorial** – children then build on this concrete approach by using these pictorial representations, which can then be used to reason and solve problems.

**Abstract** – with the foundations firmly laid by using the concrete and pictorial methods the children can move onto an abstract approach using numbers and key concepts with confidence.

# Maths in Early Years Foundation Stage (EYFS)

Our EYFS classrooms provide a rich and stimulating environment for children to immerse themselves in Mathematics. These carefully planned areas change on a regular basis and encourage children to develop their mental Mathematics and practical skills. Practitioners in the Early Years classrooms are skilled enough to ensure that spontaneous teaching of Mathematics happens as part of the daily provision. Children can explore key aspects of Mathematics including counting, sorting, matching, seeking patterns, making connections, recognising relationships, working with number, shapes, space and measures. Mathematical understanding is also developed through stories, songs, games and imaginative play, so that all children enjoy using and experimenting with mathematical concepts and become confident and enthusiastic problem-solvers. Activities and experiences are planned against the EYFS Curriculum and children’s progress in Mathematics is assessed against the Early Learning Goals.

# Assessment

Assessments for learning occur throughout Mathematics lessons, enabling teachers to adapt their teaching to meet the children’s needs. Feedback from teachers to children is provided whenever possible at the point of learning to maximise the impact of feedback and allow children to respond. Where appropriate children will respond to teachers’ feedback in green pen. This should be documented in books referring to the schools’ marking policy. Children should be given time to read and review their work following marking.

Assessment of pupil work and progress is ongoing by the class teacher and informs future planning. Future lesson planning should consider class success evaluated through key questioning, marking, observations and reflections made during and following the lesson. Teachers use the Power Mathematics Planning / Assessment Documents along with termly standardised NFER tests to make a judgement about children’s progress in Mathematics throughout the year. In Year Six, past SATS test papers are used in the Spring term to prepare children for their End of Key Stage Assessments in the Summer term.

The Multiplication Tables Check (MTC) became mandatory for all pupils in Year 4 during the 2021/22 academic year. In order to prepare pupils for this dedicated time is set aside each day for the quick recall of known multiplication facts. Pupils also complete low-stake tests in their multiplication tables practice books and have access to their own Times Table Rock Stars account.

Class teachers and SLT meet termly to discuss the progress of children in Mathematics each term, ensuring that children are supported appropriately.

# Displays

At Penketh South, each class displays relevant mathematical information which supports pupils’ learning in class. We recognise the importance of displays in the teaching and learning of Mathematics and displays are appropriate to the age of the class. Our working walls are a reflection of a child’s learning journey throughout a particular mathematical topic. Relevant mathematical vocabulary is always on display and children are encouraged to take ownership of this to further consolidate their understanding of different mathematical concepts.

# Links across the curriculum

Our aim is to develop Mathematics through well-matched, chosen topics, themes and ideas in all subjects so pupils understand and appreciate the importance of mathematics in every day contexts. Mathematics will be prominent in recording and evaluating science investigations, measuring and developing products in Design and Technology and in competitive games in PE sessions. Technology will be used in various ways to support teaching whilst accelerating and motivating children’s learning. IPads and laptops allow the children to access a range of online activities to further develop or consolidate learning, including ‘Numbots’ (for embedding fluency of number bond facts) and ‘Times Table Rock Stars’ (for embedding fluency of multiplication and related division facts).

# Research

A subject leader network is attended by the subject leader each half term to share good practice and receive updates and guidance within the evolving world of Mathematics. Within the academy we have also established a dedicated Primary Mathematics Hub which involves all of the primary schools within TCAT. Subject leaders from each school meet on a half termly basis to share good practice and discuss current research around the subject.

# Equality & Diversity

At Penketh South, we endeavor to maintain an awareness of and to provide equal opportunities for all our pupils in mathematics. We are committed to providing a teaching and learning environment conducive to learning. Each child is valued, respect and challenged regardless of ability, race, gender, religion, social background, culture or disability. We strive to ensure that all tasks set are appropriate to each child’s level of ability and have high expectations of all children. We believe that their work should always be of the highest possible standard and we celebrate the different experiences, interests and strengths that influence the way in which they learn.