**Mathematics at St Augustine’s Catholic Primary School**



***“The only way to learn mathematics, is to do mathematics.”***

***Paul Haimos***

Intent

At St Augustine’s, we aim to equip all pupils with the skills and confidence **to solve a range of problems through fluency with numbers and mathematical reasoning**. Children are encouraged to see the mathematics that surround them every day and enjoy **developing vital life skills and knowledge** in this subject.

We strive to ensure that children will enjoy maths at St Augustine’s and that all children **are equipped with the skills they require to be successful mathematician in the future.** Our Mathematics Curriculum is ambitious, rich and meaningful, based on a teaching for mastery approach which is accessible to all and will maximise the development of every child’s ability and academic achievement. We have high expectations of all children and strongly believe that all children can be successful mathematicians who, develop as resilient learners, understanding that misconceptions are a key part of their learning.

Mathematics is life-enriching and children will spend time becoming true masters of content, applying and being creative with new knowledge in multiple ways. We aim to teach for **children to develop secure and deep understanding of mathematical concepts through purposeful sequencing of manageable steps, ensuring children make connections across mathematical ideas**

We wish f**or children to be efficient, flexible and accurate, mathematicians, fluent in the fundamentals of mathematics with rapid and efficient recall of key facts and procedures.** We believe that **fluency demands more of our students than memorisation** of a single procedure or collection of facts. It encompasses **a mixture of efficiency, accuracy and flexibility**. Fluency demands our children to be able to have the **flexibility to move between different contexts and representations of mathematics**, to recognise relationships and make connections, and to make appropriate choices from a whole toolkit of methods, strategies and approaches. It is vital that we provide our children with the opportunity to be fluent so that they are able to have quick and efficient recall of facts and procedures to support them in thinking strategically and solve problems. Through clear teaching of procedural and factual knowledge, we aim to support our children to  get to automaticity with procedures and facts so that **it frees their minds to think about concepts.**

Additionally, we want our children to be **mathematical thinkers, reasoning with confidence** and to be **skilled problem solvers,** applying their knowledge to a range of problems , deepening their understanding of the mathematics.

We want our children to be able to **talk like a mathematician** consistently using key mathematical vocabulary and specific terms to improve their overall mathematical language proficiency.

We intend for our pupils to be able to apply their mathematical knowledge to the wider curriculum in our school. As our pupils progress to their next stage of education, we wish for them to be able to understand the world , have an appreciation of the beauty and power of mathematics, and a sense of enjoyment and curiosity about the subject.

Implementation

**Pedagogical approach** - mathematics is delivered consistently using our curriculum wide pedagogical approach which prioritises supporting children in their shift of knowledge from short term to embedding into their long term memory.

**White Rose** - From September 2023 all year groups were introduced to White Rose Maths, which is centred around the belief that all children can achieve. White Rose Maths is a whole class teaching for mastery approach to mathematics, with carefully planned teaching sequenced and a progressive program of study based on the National Curriculum, enabling the children to deepen their mathematical knowledge and understanding.

**Fluency** – there is a whole school focus on fluency with daily opportunities for children to secure this knowledge, understanding and number sense to promote rapid recall of key facts and procedures. Fluency for all children is developed through daily **Fluent in Five** session to support our children’s retrieval and to support them in knowing more and remembering more. A clear progression in the acquisition of **times tables** also supports our children in mastering their times tables. Additionally , EYFS, Year 1 and Year 2 engage in the **NCETM’s Mastering Number Programme** which is designed to strengthen the understanding of number and fluency with number facts. A detailed calculation policy is in place for the 4 operations, directly linking to the NC expectations

**Whole class together** – White Rose is based around a whole-class interactive teaching model that supports learning for all by teaching concepts for longer to deepen learning and understanding. *In line with NCETM advice, one form of depth frequently used, during the first part of the lesson, is variation theory (conceptual and procedural). Variation is one of the five ‘big ideas’ at the heart of Teaching for Mastery. For example, a child who can produce a quick correct answer may be asked to solve the question using more than one other procedure, to represent the question in more than one way (such as the bar model or part whole).*

**Longer but deeper –** in order to ensure children have a secure and deep understanding of the content taught, our long and medium term plans, in line with White Rose, allow longer on topics. White Rose has taken the National Curriculum and has broken it down into core concepts and then divided into small steps.

**Meeting the needs of all learners** - teachers **adapt** each lesson to meet the needs of their children with the learning focusing on one key conceptual idea, supporting children to make connections with their mathematical knowledge. **High quality teaching** which meets the needs of all learners is a necessity to make sure each individual child can achieve and be successful.

**Key learning points** are identified during planning, with a clear journey through the maths evident. Learning points may appear to be very small but this is deliberate to support children in mastering the small step. For example, a whole lesson may be spent on adding the ones to a 3-digit number.

**Questions** will probe pupil understanding throughout to consolidate, address misconceptions and to deepen their understanding and knowledge. Responses are expected to use precise **mathematical vocabulary,** which is discussed, displayed and modelled by the class teacher.

**Recording the** ***learning***– not just pages of similar calculations. Children complete their independent tasks within their exercise books which contains carefully crafted questions.

**Practising** – not drill and practice but practice characterised by variation. Children are provided with **carefully chosen varied fluency, reasoning and problem solving questions and tasks**. Some children, namely our SEND children with Cognition and Learning as a Primary or Secondary Need, may, as required, be provided with different tasks and questions appropriate to their understanding of a concept and the correct curriculum stage at which they are working. We have the highest expectations of presentation, especially to support place value and written calculations

**CPA approach** - The CPA approach is used to secure understanding and to help children to **visualize** the mathematics taking place through the use of carefully chosen practical resources and pictorial representations to explore concepts and to enhance the children’s learning

Develop **reasoning and deep understanding of problem solving**  – problems are often set in real life contexts – with mathematical thinking (reasoning and problem solving) embedded throughout each lesson and not just at the end.

**Questions** to challenge thinking – teachers use **high quality, effective questioning** throughout every lesson to check understanding – a variety of questions are used, but you will hear the same ones being repeated: How do you know? Can you prove it? Are you sure? Can you represent it another way? What’s the value? What’s the same/different about? Can you explain that? What does your partner think? Can you imagine?

**Discussion** – pupils have opportunities to talk to their partners and explain/clarify their thinking at all stages during their lessons. Classrooms are **rich in mathematical talk and language**. A clear progression in vocabulary is used and modelled by teachers and shared with the children

**Feedback – live marking** takes place within the lesson. In mathematicsnew learning is built upon previous understanding, so in order for learning to progress and to keep the class together where appropriate, **rapid intervention** is key. Children are supported to keep up, with areas of difficulty dealt with as and when they occur.

**Assessment** – along with ongoing formative assessment, this takes place through the use of White Rose end of unit assessment points and NFER assessments

Children in **EYFS** explore mathematical concepts through active exploration and their everyday play-based learning. Children are taught key concepts and application of number using a hands-on practical approach. EYFS practitioners provide opportunities for children to manipulate a variety of objects, which supports their understanding of quantity and number. The CPA approach is used when teaching children key mathematical skills. Practitioners allow children time for exploration and the use of concrete objects helps to support children's mathematical understanding. Maths in the early years provides children with a solid foundation that will enable them to develop skills as they progress through their schooling and ensures children are ready for the Nation Curriculum. White Rose and Mastering Number is utilised to support the children’s mathematical learning.

**Impact**

From learning walks, pupil voice, pupil progress meetings and book looks, it is really clear that children enjoy maths at St Augustine’s. They are increasingly fluent with their mathematics - not only accurate but flexible and efficient too. They are able to reason with confidence and can apply their knowledge to be able to solve a wide range of problems with resilience, preserving with their learning It is evident that children have a secure knowledge of the formal written methods of calculation in line with the calculation policy and can talk confidently about mathematics using accurate vocabulary

Following the children live marking their work, teachers daily complete feedback sheets, looking at the children’s work so as to inform their planning for the subsequent days. This provides teachers with a greater understanding as to whether all children have grasped the small step which had been delivered that day. This then allows teachers the opportunity to reinforce learning where required the following day. Formative assessment is additionally ongoing during the lesson continually so as to evaluate learning at every stage, through the use of a variety of strategies including effective questioning, so as to check understanding and identify and address any arising misconceptions immediately.

Termly summative NFER assessments not only allows teachers to evaluate how each individual child is progressing in their mathematical learning journey at St Augustine’s, but they provide a robust whole school overview for the Maths Lead and SLT within our school.

These assessments are further utilised so as to support staff in adjusting their planning accordingly to meet the emerging needs of the children and to ensure additional time can be allocated to specific concepts where necessary. Outcomes at the end of each Key Stage are aspirational from individual starting points

All of this provides the Maths Lead and SLT a clear insight with regards to where the strengths and areas that require further developing within the school lie. From this, the Maths Lead is able to tailor the CPD and training so as to focus additional support and training where required for the whole staff or individual teachers.

The combination of all of these systems allows us to judge the impact of the maths curriculum in our school.