Mathematics at St. Mary's Catholic Academy

At St. Mary's Primary, we are committed to providing a high quality mathematical education for all our children, regardless of ability. We aim to create a sense of enjoyment and curiosity about maths, whilst providing a foundation that allows them to better understand and make connections with the world around them.

At the centre of St. Mary's mastery approach to teaching mathematics is our belief that all pupils have the potential to succeed. Developing a positive mathematical mind-set in every child enables them to pro-actively take ownership of their learning. Through varied practice, we develop their conceptual understanding of key mathematical concepts and then deepen their understanding by planning opportunities for them to reason and apply their learning when solving problems. All this enhances their ability to make connections with their wider mathematical thinking, to make connections with the rest of their curriculum and eventually to make connections to the wider world around them.

Curriculum Intent.

Our curriculum has been developed around three core interconnect mathematical ideas:

- Fluency
- Reasoning
- Problem Solving

Children's learning is developed to allow them to make rich and lasting connections across these three principles. It allows them to challenge their understanding, talk about their mathematical thinking and apply their knowledge in a variety of context (inc cross curricular use).

In addition to our three core ideas, our key teaching values are:

- To inspire and engage children
- To allow all children the opportunity to access their learning
- To develop a positive mind-set towards mathematics

Fluency

Our aim is that:

- all children should have a rich repertoire of 'Key Instant Recall Facts' that they are able to draw upon to support their mathematical thinking.
- lessons provide the opportunity to recall number facts, allowing them to strengthen their recall ability.
- children are confident in their understanding of representations and how these 'show' the maths.
- conceptual and procedural variation is carefully developed within lessons to support and draw out key mathematical structures.

Reasoning

Our aim is that:

- children feel confident to talk about their maths and explore their ideas and mathematical thinking through discussion.
- stem sentences and generalised statements are used to help children develop their ability to talk about their mathematical understanding.
- children are exposed to a rich variety of mathematical language and are able to use it appropriately.
- children are able to explain WHAT has happened or WHY we know something.
- children are able to make connections between the different fundamental areas of mathematics.

Problem Solving

Our aim is that:

- children are able to apply their understanding to solve problems in the concept they are mastering.
- children are able to draw on their prior understanding and apply this to other areas of mathematics to help them solve more complex problems.
- children are able to draw on their mathematics skills in order to solve problems in other subject areas and in the wider world.

Inspire and Engage All Children

Our aim is that:

- All teachers will plan lessons that inspire children to be engaged and intrigued about mathematics.
- All children will be resilient learners - inspired to try their best and 'have a go'.
- Lessons and activities will be motivational and achievable, but still presenting the right amount of challenge.

Allow ALL Children the Opportunity to Access Their Learning

We aim to do this by:

- supporting children who need additional support in order to access the lesson
- challenging children who are ready to become masters of their knowledge
- ensuring all children are motivated and driven to achieve their best

Developing a Positive Mind-set Towards Mathematics

We aim to create a learning environment where:

- children are not afraid to be wrong and will share their ideas and mathematical thinking.
- Children recognise that mistakes are opportunities to better understand what something IS by further understanding what it IS NOT.
- children understand that we are all on a learning journey together and recognise they can support each other on that journey
- mathematics is celebrated and children are excited about their lessons
- every child fosters the belief that maths is for EVERYONE

Curriculum Implementation.

St. Mary's has a dedicated whole school approach to mastery teaching.

Our long-term plan has been developed from the National Curriculum and The White Rose Math Hub, but is adapted in order to consider our mixed year group classes. Teachers have access to a variety of online resources and materials, plus their own subject knowledge, training and experience to draw upon when planning unique and tailored lessons. The school made a collective decision to move away from a prescriptive scheme four years ago and instead, have built a curriculum that allows us to attend to our learners needs, offering dynamic and personalised learning to our mixed year classes. After spending time understanding and embedding mastery practise across our whole curriculum, the staff are now being closely supported by our new maths co-ordinator, who has recently been appointed the role of Mastery Specialist with the NCETM. Mrs Mallabar is working with the staff, particularly those teaching year 1, to develop and craft teaching that draws out key mathematical concepts, allowing staff to deepen their understanding of mastery and how the '5 big ideas of Mastery' can help children achieve a deeper understanding of maths and make connections with the wider world.

Mathematics is taught daily in each class and there is an additional 15-20 minutes daily fluency practise outside of main lesson time. The children are exposed to daily counting during maths lessons and progressively build on key recall facts as they progress through the school.

Teachers use concrete apparatus, pictorial representation and abstract mathematics to allow children to understand and represent their maths.

During lessons, teachers will use a 'ping-pong' approach with the children, whereby the teacher models to the children and then they are guided through some practice that highlights the structure they are learning. This 'ping-pong' allows the teacher the use AFL to quickly establish the children's understanding and spot any misconceptions. Teaching comes back to the teacher and the children eventually work independently. 'I do some, we do some, you do some' is used across the whole school to support and scaffold the small steps.

Or wider curriculum is designed to support cross-curricular use of key skills, encouraging the children to use their mathematical skills across many other areas (for example in science during

investigations, geography using coordinates and map reading skills, art applying sequencing skills and music composing music with accurate timings).

Teachers use all available time to address any misconceptions or misunderstanding. Pre-learning will take place early in the morning before lessons start and same day intervention where available during the afternoons, to address issues quickly and allow children to move on during their next lesson.

Fluency

During lessons

During the lesson, children begin each lesson with a counting activity. These counting activities are carefully planned by the teacher to in order to either: practise a number pattern that will be needed during their lesson, enabling children of all abilities to begin to scaffold their learning for the lesson; as a pre-learning activity for a later lesson, allowing the teacher to move learning forward in that lesson at a quicker pace; or as revision of some key number facts/counting skills the children need to secure.

The whole class teaching will have been developed to include fluency practise within their learning activity. The conceptual and procedural variation within a lesson is carefully considered by the teacher, in order to pull out the key structure or idea that the children need to focus on.

Outside of lessons.

Each day, the children will complete 15-20 minutes of further fluency practice. This time is allocated to allow the class teacher to teach the 'Key Instant Recall Facts' that we expect our children to be mastering in order to increase automaticity, and to also allow time for the children to practice fluency skills that have been taught earlier in the year, or the previous years. This practise is usually in the form of quick games that allow the children to apply and recall their number facts.

Reasoning

As a school that teaches 'Talk for Writing', we are developing our children's ability to 'Talk for Maths'. Key questions are woven into lessons that prompt the children to think, talk and express their ideas and understanding about maths in the world around them. Pictures, images and mathematical representations are used to draw out discussion and key teaching points.

Stem sentences and generalised statements are used to structure the children's understanding and scaffold their steps through the lessons.

Key mathematical vocabulary is discussed during lessons and displayed/used during teaching and on the working walls.

Each lesson provides ALL children, no matter their ability, with the opportunity to reason and discuss their understanding with their peers and teacher.

Problem Solving

Problem solving opportunities are presented to the children in order to allow them to apply and relate their maths in a real-life context.

Every lesson begins with a problem or 'hook' that is relatable to the children. This problem will be unpicked throughout the teaching, ensuring that ALL children, no matter their ability, are taught how to apply their skills in real life contexts.

During independent working, children master their fluency and reasoning first and then use their knowledge to solve problems. Children at greater depth will be challenged with more complex problem solving and reasoning opportunities inc using multi-part problems and non-concepts.

Lessons end with a further problem, or 'Dong Nao Jin', where the children are given the opportunity to apply their lessons learning into a new problem or context.

Curriculum Impact.

-In action assessment during lessons and guided practise means that teachers can address misconceptions quickly and support children that need additional teaching time.

- Key Instant Recall Facts ensure that all children are developing their automaticity in number fact recall. Having these number facts at their fingertips allows them to access their maths lessons without additional barriers or calculations to proceed through.

- Regular staff CDP and mentoring ensures that staff are being given the opportunity to develop and enhance their subject knowledge and teaching practice.

- Learning and Progress document maps out the small steps taken from one year group to the next, ensuring that planning and teaching is rigorous and thorough.

- Regular summative assessment allows teachers to see what the children can apply independently. These assessments are analysed and gaps identified within each class. Areas that are weak amongst the cohort will be re-address and retaught.

- Whole school assessment analysis takes is conducted by the maths lead in order to identify gaps and areas of weakness across the whole school. These areas are then included into the School Action Plan and addressed collectively to improve standards across the school.

- Children are able to relate maths to their every day lives and see its value and worth. They understand that EVERYONE can do maths when given the right steps to take.

- Pupils enjoy their maths lessons and are excited by challenge. Our children think that maths is:

"Maths is my favourite lesson. It's always really fun and we get to show our maths using the multilink and counters and thing."

"I love maths because it's hard but fun. Miss makes us laugh and I get really excited when I can do something that I couldn't do at the start."

"I think we could make Maths better by doing more of it! Oh, and having Maths helpers who can go and help their friends who are struggling a bit"

"I like maths because I get to use the bricks and teddies to count"