St Francis Xavier Catholic Primary School
Mathematics Curriculum Intent Statement

Mathematics- Curriculum Intent

"Mathematics is the language in which God has written the universe."

Galileo Galilei

Our Mathematics curriculum here at St Francis Xavier is strongly underpinned by our Catholic Gospel Values- in particular the values of being curious, attentive, active, intentional and learned and also has strong links to our Catholic Social Teaching Principal of Dignity of Work and the Rights of the Worker. At St Francis Xavier, it is our aim to ensure that our pupils develop a secure knowledge of the key skills that they need in order to become confident Mathematicians. We nurture children who are ready to apply their problem solving and reasoning skills to Maths in the context of everyday life and who are able to think logically and to work systematically and accurately in all aspects of mathematics. At St Francis Xavier we aim to foster the resilience in our pupils to have a go at tackling any problem, to reflect and show perseverance in seeking solutions:

"I have not failed 1,000 times. I have successfully discovered 1,000 ways to NOT make a light bulb". Thomas Edison.

At St Francis Xavier, we aim to instil a love for Maths in all of our pupils, by ensuring that pupils are able to:

- Develop an accurate and rapid fluency in the fundamentals of mathematics, through varied and frequent practice with increasingly complex problems over time and developing the conceptual understanding to make links between different areas of learning as well as to real life contexts.
- Use appropriate mathematical language and vocabulary in the right context in order to reason mathematically.
- Follow a series of steps and use mathematical vocabulary to solve both routine and non-routine problems and explain their reasoning by looking for relationships and generalisations, developing an argument, or providing a justification or proof to support their outcome.
- Make rich connections across mathematical ideas, as well as the curriculum, to develop fluency, mathematical reasoning and competence in solving increasingly sophisticated problems by applying and recalling previous knowledge.

Mathematics is an interconnected subject in which pupils need to be able to move fluently between representations of mathematical ideas. We want our pupils at St Francis Xavier to develop the ability to apply their mathematical knowledge and skills to the wider curriculum so that they can see the real life applications of mathematics. For example,

- **RE & History** *(Measurement: Time, Place Value: Value of each digit in a year/chronological ordering)*
- **Science** *(Statistics, Measurement, Place Value, the four operations, ratio, algebra and proportion)*
- **Computing** *(statistics, geometry)*
- **Geography** *(position & direction)*

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- **Art** *(geometry)*
- **DT** *(Measurement, Geometry, Fractions)*
- **PE** *(statistics, measurement, position & direction)*
- **Music** *(Measurement: Time)*

****** The Mathematical Strands in brackets above are not an exhaustive list- they are just examples of the strands that link to the wider curriculum ******

At St Francis Xavier it is our aim for the majority of pupils to move at broadly the same pace through the programmes of study, using small steps in understanding and coherence, whilst also considering the pace of learning required to ensure an appropriate level of challenge for all. Although our teachers use a detailed medium-term plan as a framework for this progress, they address gaps in pupil's mathematical knowledge and understanding through appropriate scaffold and adaptation. For some pupils, a personalised curriculum plan for Mathematics is more appropriate in enabling them to achieve success in Mathematics. Teachers have the flexibility to deliver content in a way that it is engaging and effective in Mathematics to ensure the children are inspired and thrive in their learning, no matter their age or ability.

We strongly believe that a home school partnership is vital in enabling children to achieve their full potential and we adopt a range of strategies to enable our parents and carers to support their children to develop as confident mathematicians by providing a range of workshops and parent information sessions to help them understand the skills and methods taught.

Implementation

At St Francis Xavier, we follow the White Rose Maths scheme of work which breaks each concept down into a progression of clear, logical small steps. This ensures that knowledge is embedded so that our children know more and remember more. White Rose provides our teachers with a clear framework for the delivery of Maths. It is broken down into a series of medium-term plans for each year group which contain weekly units and a clear end of topic assessment. The White Rose Maths Curriculum enables our children to become confident mathematicians who are able to solve problems, reason, think logically and work systematically and accurately in all aspects of mathematics by building on previous content and understanding.

Key Vocabulary is introduced at the beginning of each new unit. This will be modelled and used by the teacher in context as well as displayed clearly on class Maths Working Walls to develop language acquisition and ensure that the children can use new mathematical language regularly and correctly when using verbal or written explanations in their work. Through clear modelling by adults, peers and the environment around them, children can develop their knowledge and understanding of mathematical concepts, ensuring this becomes embedded over time.

We follow the concrete – pictorial – abstract approach in Maths at St Francis Xavier to help children explore and demonstrate mathematical ideas, enrich their learning experience and deepen understanding at all levels:

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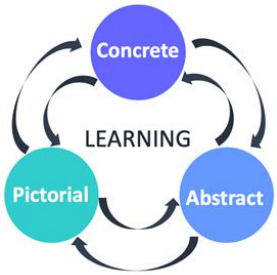

- ***Concrete*** - children can use concrete objects and manipulatives to help them understand and explain what they are doing.
- ***Pictorial*** - children can build on this concrete approach by using pictorial representations, which can then be used to reason and solve problems.
- ***Abstract*** - With the foundations firmly laid, children can move to an abstract approach using numbers and key concepts with confidence.

Pupils are given the opportunity to use manipulatives and images before advancing to abstract representations to enable them to develop their conceptual fluency. It is important that these are used alongside abstract methods when revisiting, consolidating and advancing the learning. We have a school calculation policy which shows the progression of abstract, pictorial and abstract skills and methods for the four operations.

At St Francis Xavier, children move through the different stages of their learning at their own pace, and we ensure that our Maths lessons provide the opportunity of 'Challenge for All'. All pupils, regardless of age or ability will be encouraged to have a go at a challenge task during the lesson at a level appropriate to them. Through careful observation and assessment during the lesson, any children who have shown a deepened level of understanding, will have opportunities to apply these skills in a Greater Depth activity, which is challenging and ensures that the children are using more than just one skill to be able to answer the mathematical problems. To enable the children at St Francis Xavier to develop their mathematical thinking, it is vital that reasoning and problem solving are integral elements to any mathematical activities given. Children develop a deeper understanding when they are inspired to explore, apply and evaluate their mathematical approach during investigations and when solving a broad range of problems and puzzles.

Through links with other areas of the curriculum, children are encouraged to see the beauty of Maths in the world around them and apply their broadening range of skills with growing independence, which fosters a love of Maths.

The Typical Structure of a Mathematics Lesson:

- **Daily Flashback 4-** completed as a morning task. This gives pupils an opportunity to revisit learning from the previous lesson, learning from earlier in the unit as well as learning from previous units.

- **Mental/Oral Starter-** Counting/Chanting, quick fire recall of number bonds or times tables.
- **Anchor Task (in mixed ability pairs)**- give pupils a chance to explore the activity independently, as part of a partnership or in small groups. It requires dialogue between pupils and can tap into prior learning or the world beyond the classroom whilst stimulating and challenging children's thinking.
- **Let's Learn**- teachers model and demonstrate the aspect of Maths being taught. Where appropriate this will include the use of manipulatives and representations. Children are given opportunities for discussion with their 'Talk Partners' and/or peer working.
- **Model Examples-** children are familiar with Tiny the Tortoise and will be shown a mixture of strong modelled examples and an example with an error which they will need to identify using mathematical explanations and reasoning using key vocabulary.
- **Now Try This-** an opportunity for children to 'have a go' based on the teacher input. Teachers will use this as an assessment opportunity for challenge or to identify and correct any misconceptions.

- **Independent Task-** children will have the opportunity to complete some independent tasks linked to the lessons content (this will be scaffolded and adapted as appropriate to meet the needs of all pupils). There is no expectation that every Maths lesson should be recorded in a book- some lessons might lend themselves more to the use of practical equipment, maths games or use of the outdoors in order to build confidence and fluency. However, as children progress through the units and their knowledge grows, more time will be spent recording independent practice in their books.

A flexible seating approach is used in all Maths lessons so that teachers can assess the understanding of children throughout the lesson/unit and move them accordingly. Tasks are scaffolded and adapted where necessary to meet the needs of individual children or groups of pupils. This can be through adapted tasks or the allocation of resources. This enables the teacher to ensure that children are being appropriately challenged as well as supported.

Impact

All of our pupils who leave St Francis Xavier at the end of KS2 should be able to recognise the value of Maths in their lives and understand that it is an essential skill which they will carry forward with them. All of our pupils, regardless of ability, background or additional needs should be able to confidently apply their Maths knowledge and skills confidently to problem solve and reason, as well as being able to fluently recall facts and use written methods.

Through our teaching and rigorous assessment here at St Francis Xavier, we ensure our children have developed a quick recall of facts and procedures, the ability to recognise relationships and make connections in Maths and that they have the flexibility and fluidity to move between the different representations in Maths. If a child can use the mathematical vocabulary and language to explain their thought process, show their ideas in a variety of ways, and independently apply a concept or skill to new problems in unfamiliar situations, they have shown that they have mastered that concept or skill.

Our teachers ensure that they are responsive to the needs of our learners by using a variety of assessment strategies in order to gather data and feedback to check whether learning has occurred and how embedded this is. This then directly informs future planning of teaching and learning opportunities. This includes live marking and in the moment feedback during a lesson, use of strategic questioning to check understanding and scrutinising independent work in order to identify common misconceptions or share thinking. Such assessment allows teachers the flexibility to intervene in a lesson to remind, redirect or reteach pupils as required.