

# ST ANTHONY'S CATHOLIC PRIMARY SCHOOL



## **MATHEMATICS**

November 2020

At St Anthony's Catholic Primary School, we are committed to the development of the whole child. We strive to create an environment in which children can feel happy, confident and independent and who are enthused by learning; to ensure that children feel valued as part of a collaborative learning community, where excellence and enjoyment is at the heart. Every child will be provided with an opportunity to shine and be successful, building self-esteem and a positive sense of well-being.

### **Vision**

Our aim at St Anthony's is for all children to enjoy mathematics and have a **secure** and **deep** understanding of fundamental mathematical concepts and procedures when they leave us to go to secondary school. We want children to see the mathematics that surrounds them every day and enjoy **developing vital life skills** in this subject.

### **Aims**

- To develop a growth mindset and positive attitude towards mathematics.
- To become confident and proficient with number, including fluency with mental calculation and look for connections between numbers.
- To become problem solvers, who can reason, think logically, work systematically and apply their knowledge of mathematics.
- To develop their use of mathematical language.
- To become independent learners and to work co-operatively with others.
- To appreciate real life contexts to learning in mathematics.

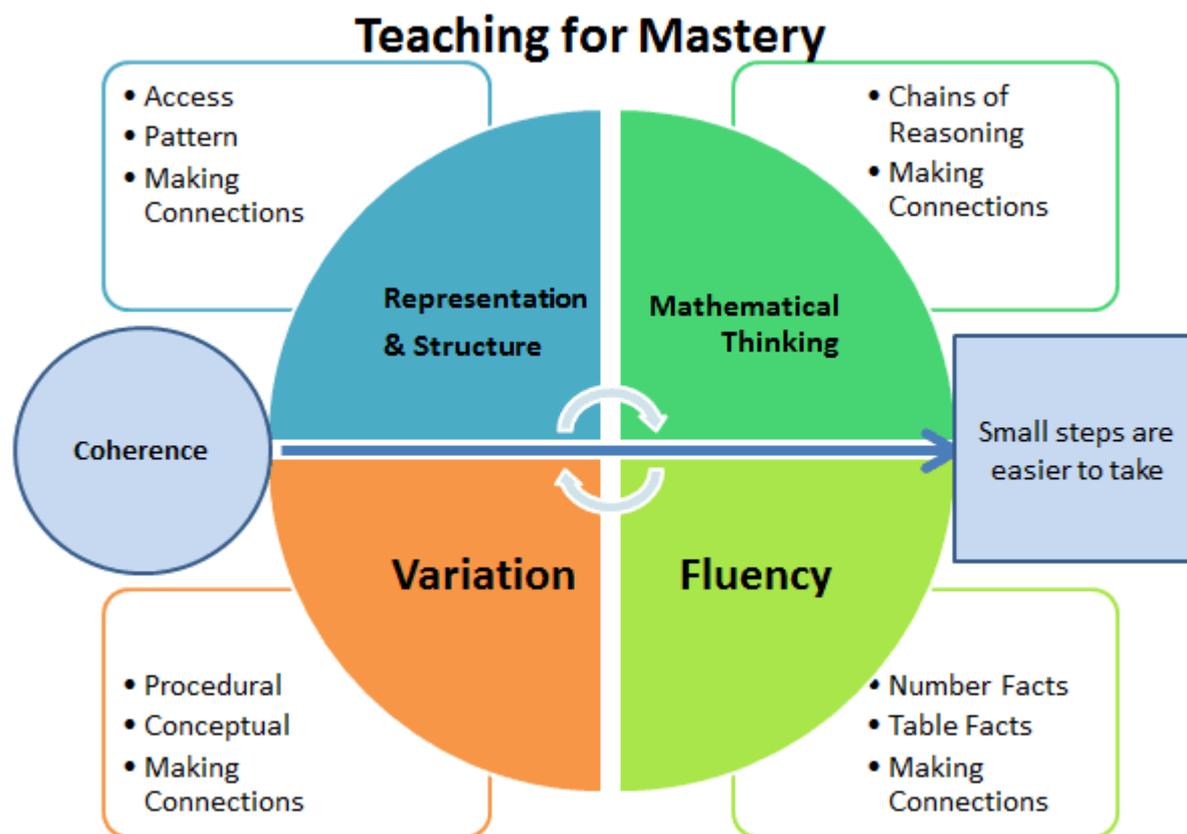
### **Background**

In September 2017, St Anthony's Catholic Primary School began transitioning towards a mastery approach to the teaching and learning of mathematics. We understood that this would be a gradual process and take several years to embed. The rationale behind changing our approach to teaching mathematics lay within the NCETM Maths Hub Programme as well as the 2014 National Curriculum, which states:

- *The expectation is that most pupils will move through the programmes of study at broadly the same pace.*
- *Pupils who grasp concepts rapidly should be challenged through being offered rich and sophisticated problems before any acceleration through new content.*
- *Those who are not sufficiently fluent with earlier material should consolidate their understanding, including through additional practice, before moving on.*

# FLUENCY – REASONING – PROBLEM SOLVING

These three key aims of the National Curriculum should be addressed in each sequence of learning.



## 5 Big Ideas

- Opportunities for **Mathematical Thinking** allow children to make chains of reasoning connected with the other areas of their mathematics.
- A focus on **Representation and Structure** ensures concepts are explored using concrete, pictorial and abstract representations, the children actively look for patterns and generalise whilst problem solving.
- **Coherence** is achieved through the planning of small, connected steps to link every question and lesson within a topic.
- Teachers use both procedural and conceptual **Variation** within their lessons and there remains an emphasis on **Fluency** with a relentless focus on number and times table facts.

## Non-negotiables

- Everyone can learn mathematics to the highest levels.
- If you 'can't do it', you 'can't do it **yet**'.
- Mistakes are valuable.
- Questions are important.
- Mathematics is about creativity and problem solving.
- Mathematics is about making connections and communicating what we think.
- Depth is much more important than speed.

## Teaching for Mastery Principles

**It is achievable for all** – we have high expectations and encourage a positive ‘can do’ mindset towards mathematics in **all** pupils, creating learning experiences which develop children’s resilience in the face of a challenge and carefully scaffolding learning so everyone can make progress.

**Deep and sustainable learning** – lessons are designed with careful small steps, questions and tasks in place to ensure the learning is not superficial.

**The ability to build on something that has already been sufficiently mastered** – pupils’ learning of concepts is seen a continuum across the school.

**The ability to reason about a concept and make connections** – pupils are encouraged to make connections and spot patterns between different concepts (E.g. the link between ratio, division and fractions) and use precise mathematical language, which frees up working memory and deepens conceptual understanding.

**Conceptual and procedural fluency** – teachers move mathematics from one context to another (using objects, pictorial representations, equations and word problems). There are high expectations for pupils to learn times tables, key number facts (so they are automatic) and have a true sense of number. Pupils are also encouraged to think whether their method for tackling a given calculation or problem is appropriate and efficient.

**Problem solving is central** – this develops pupils’ understanding of why something works so that they truly have an appreciation of what they are doing rather than just learning to repeat routines without grasping what is happening.

**Challenge through greater depth** - rather than accelerated content, (moving onto next year’s concepts) teachers set tasks to deepen knowledge and improve reasoning skills within the objectives of their year group.

## Curriculum design and planning

- Staff use **White Rose Maths Schemes of Learning** as a starting point in order to develop a coherent and comprehensive conceptual pathway through the mathematics. The focus is on the **whole class progressing together** although differentiated activities are provided. Collaborative planning with year group colleagues ensures consistency.
- Learning is broken down into small, connected steps, building from what pupils already know. The lesson journey should be detailed and evident on flipcharts as there is no requirement for teachers to produce detailed paper plans.
- Potential misconceptions are identified in advance and strategies to address them planned.
- Key questions are planned, to challenge thinking and develop learning for all pupils.
- Contexts and representations are carefully chosen to develop reasoning skills and to help pupils link concrete ideas to abstract mathematical concepts.
- The use of high- quality materials and tasks to support learning and provide access to the mathematics, is integrated into lessons. These may include **White Rose Maths Schemes of Learning and Assessment Materials**, **Power Maths** textbook activities, **NCETM Mastery Assessment** materials, **NRIC**, visual images and concrete resources and material purchased from Tara Loughran.

### **Feedback and Marking**

Feedback and marking of mathematics books should be completed in line with our school Feedback and Marking statement that can be found in our school Assessment policy. The focus is on live feedback and marking and intervention within the lesson.

### **Assessment**

In addition to the formative assessment undertaken in lessons, teachers will use termly NFER summative assessments to reinforce their judgements and provide further opportunities to identify gaps in pupil learning and tailor future lessons. Teacher judgements are then entered onto our school trackers at the end of each term. Children in years 2 and 6 take the SATs examinations and children in year 4 the Multiplication Tables Check. See our school Assessment Policy for further detail.

### **Intervention**

We use two specific intervention programmes- 1<sup>st</sup> Class @ Number and Success @ Arithmetic. One member of staff leads this programme for identified children in KS1 and another in KS2. Progress is monitored by the intervention lead and shared with the mathematics leader. Children receiving these interventions will have been assessed as being more than 2 years behind their current year group.

### **Inclusion and Special Needs**

At St Anthony's Catholic Primary, we aim to meet the needs of all children, considering gender, ethnicity, culture, religion, language, disability, age and social circumstances. The provision for children with special needs is detailed in the SEND Policy. SEN pupils may be supported by additional adults, use different resources, complete differentiated activities. They may also complete additional activities outside of the mathematics lesson or be taught in small groups.

We have high expectations of all children and strongly believe that all children can achieve in mathematics. Some may take longer to grasp concepts and may need careful scaffolding or extra time/support.

### **Home/School Link**

We encourage parents/ carers to be involved in the mathematics curriculum by:

- Inviting parents in twice a year for parents evening to discuss their child's progress.
- Reporting on mathematical progress in their child's report.
- Using our mathematics page on the school website to provide information about how we teach the four calculations as pupils move through the school.
- Delivering workshops.
- Pupils are provided with mathematics home-learning on a half-termly basis.
- Children have access to Mathletics and Times Table Rockstars (online learning platforms) at home.

### **Early Years Foundation Stage (EYFS)**

Children in EYFS explore mathematical concepts through active exploration and their everyday play-based learning. Children are taught key concepts and develop number sense 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 with a focus on conceptual **variation**. Pupils explore the 'story' of numbers to twenty and the development of models and images for numbers as a solid foundation for further progress. Practitioners allow children time for exploration and the use of concrete objects helps to support children's mathematical understanding. Mathematics 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 National Curriculum.

### **Role of the Subject Leader**

- Ensures teachers understand the requirements of the National Curriculum and supports them to plan lessons. Leads by example by setting high standards in their own teaching.
- Leads continuing professional development; facilitates joint professional development – especially Lesson Study; provides coaching and feedback for teachers to improve pupil learning.
- Leads the whole-school monitoring and evaluation of teaching and learning in mathematics by observing teaching and learning in mathematics regularly; analysing assessment data in order to plan whole school improvement in mathematics; conducting work scrutiny to inform evaluation of progress; conducting pupil interviews.
- Takes responsibility for managing own professional development by participating in external training, independent private study, engaging in educational research and scholarly reading and keeping up-to-date with Teaching for Mastery developments.
- Keeps parents informed about mathematics issues.
- Ensures that the school's senior leaders and governors are kept informed about the quality of teaching and learning in mathematics.
- Works in close partnership with the school's senior leaders to ensure the learning needs of all pupils in mathematics are met effectively.
- Keeps the school's policy for mathematics under regular review.

This assessment policy will be reviewed annually.

**Next review: September 2022**

**Assessment leader: Stuart Booth (Deputy Headteacher)**