



# Curry Rivel Church of England Primary School

## Teaching for Mastery: Mathematics Policy

### Intent

Our aim at Curry Rivel Church Of England Primary School 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 for our pupils

- 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.

### Introduction

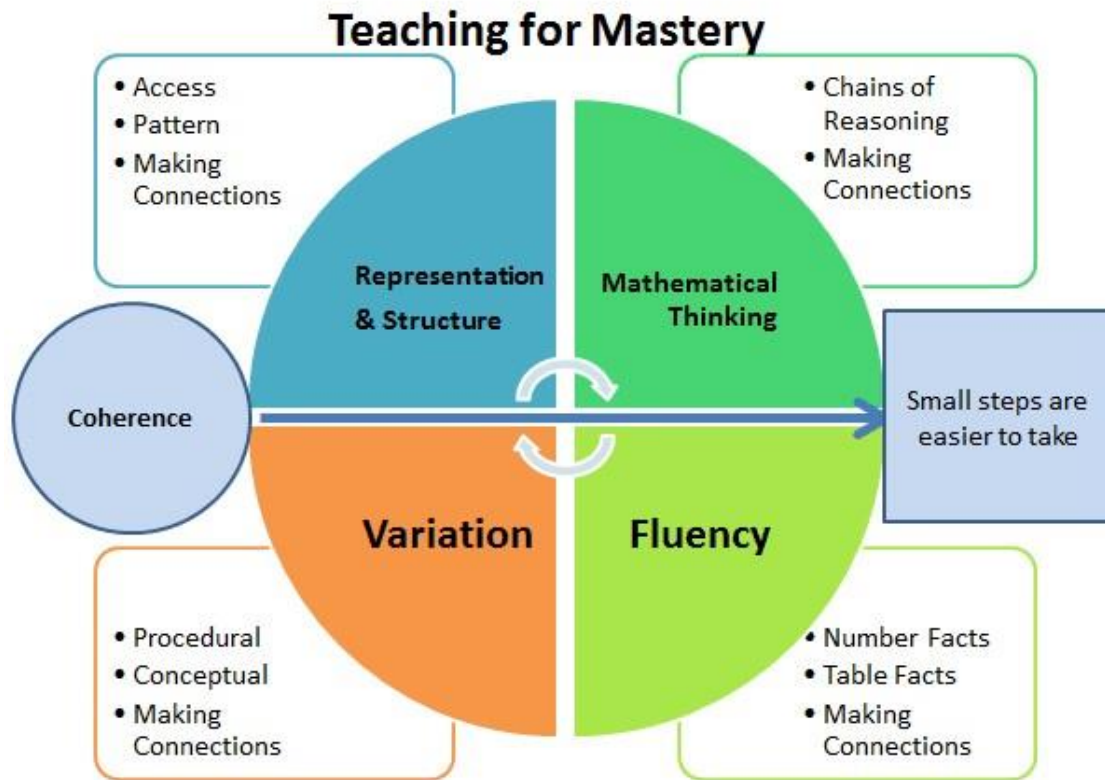
In September 2020, Curry Rivel Church Of England Primary School began transitioning towards a mastery approach to the teaching and learning of mathematics. We understood that this would be a gradual process and take several years to embed. The rationale behind changing our approach to teaching mathematics 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 of Mastery <sup>1</sup>



Our teaching for mastery is underpinned by the NCETM's 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.

### **8 Classroom Norms to Establish:**

1. Everyone can learn mathematics to the highest levels.
2. If you 'can't do it', you 'can't do it **yet**'.

3. Mistakes are valuable.
4. Questions are important.
5. Mathematics is about creativity and problem solving.
6. Mathematics is about making connections and communicating what we think.
7. Depth is much more important than speed.
8. Mathematics lessons are about learning, not performing.

*1 This document has been created using content provided by the NCETM/Maths Hub Mastery Specialist Programme.*

### **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, Reliable and Efficient (A.R.E).
- **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

- Prior to September 2021, teachers have used the **White Rose Maths Schemes of Learning** as a starting point in order to develop a coherent and comprehensive conceptual pathway through the mathematics. As part of our 'Recovery Curriculum' we have been using The DFE 'Ready to Progress' guidance and since September 2021, the NCTEM's 'Curriculum Prioritisation in Primary Maths' <https://www.ncetm.org.uk/classroom-resources/cp-curriculum-prioritisation-in-primary-maths/>
- The focus is on the **whole class progressing together**. Collaborative planning with year group colleagues is encouraged to ensure consistency.
- Learning is broken down into small, connected steps, building from what pupils already know. The lesson journey is often detailed and evident on flipcharts (Smart Notebook or PowerPoint).
- Difficult points and 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**, **NCETM\* Mastery Assessment** materials, **NRICH**, visual images and concrete resources.
- Opportunities for extra fluency practice (*instant recall of key facts, such as number bonds, times tables, division facts, addition and subtraction facts*), as well as recalling other mathematical knowledge are provided in short 'flashback' sessions.
- In October 2021, we will be starting to use 'Numbersense', which is a highly visual number fact teaching programme for schools that leads to a deep understanding of number and number relationships, and fluency in addition and subtraction facts. The programme is aligned with the NCETM\*

\*National College for Excellence in the Teaching of Mathematics.

## Lesson Structure

- Lessons are sharply focused; digression is generally avoided.
- Key new learning points are identified explicitly.
- There is regular interchange between concrete/contextual ideas, pictorial representations and their abstract/symbolic representation.

- Mathematical generalisations are emphasised as they emerge from underlying mathematics, which is thoroughly explored within contexts that make sense to pupils.
- Making comparisons is an important feature of developing deep knowledge. The questions "What's the same, what's different?" are often used to draw attention to essential features of concepts.
- Repetition of key ideas (for example, in the form of whole class recitation, repeating to talk partners etc) is used frequently. This helps to verbalise and embed mathematical ideas and provides pupils with a shared language to think about and communicate mathematics.
- Teacher-led discussion is interspersed with short tasks involving pupil to pupil discussion and completion of short activities.
- Formative assessment is carried out throughout the lesson; the teacher regularly checks pupils' knowledge and understanding and adjusts the lesson accordingly.
- Gaps in pupils' knowledge and understanding are identified early by in-class questioning. They are addressed rapidly through individual or small group intervention, either on the same day or the next day, which may be separate from the main mathematics lesson, to ensure all pupils are ready for the next lesson.
- Teachers discuss their mathematics teaching regularly with colleagues, sharing teaching ideas and classroom experiences in detail and working together to improve their practice.

### **Marking**

Marking of mathematics books should be completed in line with the Curry Rivel Church Of England Fast Feedback policy. Next steps are not necessary as the next lesson is normally the next step in learning. However, it is essential that all marking picks up and addresses any misconceptions/mistakes and thorough questioning ensures children have clarified their thinking clearly.

### **Assessment and Record Keeping**

In addition to the formative assessment undertaken in lessons, teachers will use termly summative assessments (during Assessment Week) supplied by NFER to reinforce their judgements and provide further opportunities to identify gaps in pupil learning and tailor future lessons. Teacher judgements are then entered onto *FFT* each term and teachers talk through the progress of their pupils at termly tracking progress meetings: this ensures targeted support can be given to those who need it.

## Inclusion and Special Needs

Curry Rivel Church Of England Primary School aims to meet the needs of all, taking into account 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, different resources, differentiated activities. They may also complete additional activities outside of the mathematics lesson (E.g. Maths detectives). We have high expectations of all children and strongly believe that all children are able to achieve in mathematics. Some may take longer to grasp concepts and may need careful scaffolding or extra time/support.

## 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. Pupils explore the 'story' of numbers to twenty and the development of models and images for numbers as a solid foundation for further progress. 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. 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.

## Transition to teaching for mastery

### Academic Year 2020/21 academic year

- Two teachers (Year 1 and Year 4/5), including Maths Lead, attend Mastery Readiness Programme training (COVID Year).
- Two teachers explore methods in own classrooms.

### 2021-22 academic year

- New math subject leader involved in NCETM mastery program 'development year' TRG, collaborating and developing practice with 6 other schools and a mastery specialist.
- Launch of teaching for mastery across the school - focus on Phase 2 (other year groups started to apply some teaching for mastery principles).
- Regular internal CPD lead by the maths team and external CPD provided by the **Boolean Maths Hub**.
- Opportunities for maths team to support with planning across the school to observe mastery in action.

### 2021-22 academic year

- Ongoing opportunities for internal and external CPD and to see mastery in action.
- School further developing its approach to mastery across all year groups.