



## **Allfarthing Maths Policy**

November 2021

**This document is a statement of the aims, principles and strategies for the teaching and learning of mathematics at Allfarthing Primary School**

### **MATHEMATICS POLICY STATEMENT**

#### **Introduction**

In September 2017, Allfarthing 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 would take several years to embed. The rationale behind changing our approach to teaching maths lay within the NCETM Maths Hub Programme as well as the 2014 National Curriculum, which states:

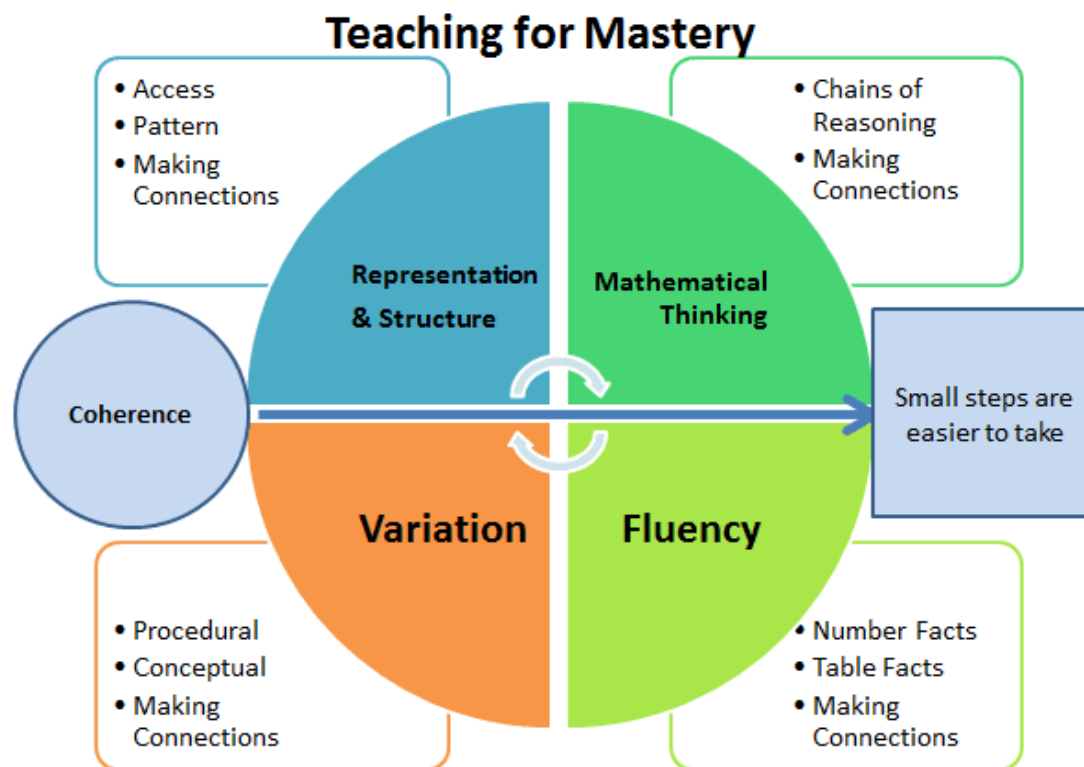
- *The expectation is that most pupils will move through the programmes of study at broadly the same pace.*
- *Pupils who grasp concepts rapidly should be challenged through being offered rich problems before any acceleration through new content.*
- *Those who are not sufficiently fluent with earlier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

#### **INTENT**

##### **Aims**

The aim of the curriculum is to develop a growth mind-set and positive attitude towards mathematics. Children should be supplied with the skills to become fluent with number and build connections between different concepts. They should become problem solvers who can reason, think logically, work systematically and apply their knowledge whilst using mathematical language to an accurate degree. They should be able to appreciate mathematics in real-life.

## The 5 Big Ideas



### **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 is an emphasis on number and times table facts.*

### **Principles of Teaching for Mastery**

- It is achievable for all – we have high expectations and encourage a positive 'can do' mind-set towards mathematics in all pupils.
- Deep and sustainable learning – lessons are designed with careful small steps. The questions and tasks in place should ensure the learning is not superficial.
- The ability to build on something that has already been sufficiently mastered – pupils' learning of concepts is seen as a continuum across the school.
- The ability to reason with 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 worded problems.
- Problem solving is central – this develops pupils’ understanding of why something works so that they truly have an appreciation of what they are doing.
- Challenge through greater depth - rather than accelerated content, teachers set tasks to deepen knowledge and improve reasoning skills within the objectives of their year group.

## **IMPLEMENTATION**

### **Curriculum design and planning**

Staff use White Rose Maths schemes of learning as a starting point in order to develop a coherent learning journey. 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 microscopic steps, building from what pupils already know. The lesson journey should be detailed and evident on flipcharts (Activ Inspire) as there is no requirement for teachers to produce detailed paper plans. Difficult points are identified in advance and strategies to address potential misconceptions are prepared for. Key questions are carefully planned, to challenge thinking and develop learning for all pupils; a variation between partner and independent work is promoted. Contexts and representations are chosen to develop reasoning skills and to help pupils link concrete ideas to abstract mathematical concepts.

### **Lesson Structure**

Lessons are focused on one learning point - digression is generally avoided and key new learning points are identified explicitly. Mathematical generalisations are thoroughly explored within contexts that make sense to pupils. Children are supported to verbalise and embed mathematical ideas through teacher-led discussion that is interspersed with short tasks involving pupil-to-pupil discussion and completion of short activities. Formative assessment is carried out throughout the lesson with the teacher regularly checking pupils’ knowledge and understanding and adjusting the lesson accordingly. Misconceptions 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 lesson, to ensure all pupils are ready for the next step. We design our tasks so that they require increasingly deep understanding; task 1 allows children to meet the learning intention and practise fluency, task 2 develops reasoning skills and task 3 builds complex problem solving skills. We then plan mastery challenges so that once children have proven a depth of knowledge they begin to make suggestions around rules and patterns.

### **KIRF**

As part of maths for mastery, there are high expectations for pupils to learn times tables, key number facts and have a true sense of number. We expect children to

know these facts at an instant recall. The Allfarthing Key Instant Recall Facts document (KIRF) is used by teachers and teaching assistants to support all children in the development of their KIRF knowledge. Many of our maths interventions are structured around the KIRF document so that there is a focus on all necessary skills needed to access the curriculum. Every class has a half-termly KIRF and this should be displayed in classrooms; it should be part of starters and Maths Meetings throughout the half-term.

### **Maths Meetings**

Maths Meetings should happen for 15 minutes twice weekly, giving pupils repeated practice of basic skills and concepts. They cover several curriculum topics and are a whole-class ritual in which it is important to establish a routine for mathematical thinking and quick transition between curriculum areas. Areas covered include money, time, statistics, 2D and 3D shapes and fluency-based questions. During Maths Meetings, we expect all of the class to be ready to respond and that children must contribute appropriate answers that include technical vocabulary and full sentences where necessary.

### **Homework**

Years 1 – 6 are set Mathematics every week. Three tasks are set and then children are encouraged to explore other activities in their own time. Y5 and 6 are set additional weekly homework in preparation for secondary school. This is generally a mix between fluency, reasoning and problem solving. Times Tables Rock Stars has also been introduced as homework, and as a classroom tool, to create opportunities for practise and fluency.

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

Children in EYFS explore mathematical concepts through active exploration and their everyday play-based learning. We teach children 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 'how manyness' of numbers to twenty through developing skills of cardinality and subitising. We use the CPA approach (concrete, pictorial and abstract) 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.

### **Inclusion and Special Needs**

Allfarthing aims to meet the needs of all - provision for children with special needs is detailed in the SEND Policy. Additional adults, different resources or differentiated activities support SEN pupils. With the lowest 20% of our school we deliver regular interventions focussed on the consolidation of basic skills, number sense, KIRFs, pre-teaching and over learning. We have high expectations of all children and strongly believe they are able to achieve in mathematics.

### **More Able Children**

The most able children in Allfarthing are encouraged to work with and to think critically about mathematical statements and general rules. Teachers plan discussion statements in all lessons to allow these children to apply their knowledge of mathematical language to express clear reasoning. Mastery challenges, with high ceilings, are planned carefully, so that these children can deepen their knowledge of the lesson's intention rather than being accelerated on to new content. The children are encouraged to complete these by using a variety of mathematical forms. They might use words, numbers or diagrams to evidence their understanding. These children may also complete their independent work at a different starting point to the rest of their peers; this is to ensure they spend a longer time on the work which will provide them with appropriate challenge.

### **IMPACT**

#### **How is impact measured?**

The impact of the curriculum is measured through regular book scrutiny, learning walks (both formal and informal), analysis of Target Tracker and assessment data and reflective discussion with teaching staff. Impact is also monitored through conversation with pupils, who should be able to explain what they have learnt previously and how this helps them with their learning now.

#### **What do we expect for the children?**

Our intent is for all children to become more proficient and confident in applying mathematical skills to everyday life and arrive into secondary education with the necessary prior knowledge for them to build upon.

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**Date agreed:** February 2020

**Review date:** February 2021