



## Maths Curriculum Overview

### **Vision**

At Grazeley Parochial Primary School, we aspire to see our children confidently develop the basic skills of mathematics which are vital for future life opportunities. At Grazeley, our Mathematics Mastery curriculum has been developed to ensure every child can achieve excellence in mathematics. Our aim is for all children to think mathematically, enabling them to reason, solve problems.

At the heart of teaching for mastery is high aspirations for everyone. It's the belief that by nurturing positive attitudes and building confidence in mathematics, a deep and sustainable learning is achievable for all children. We encourage children to develop enquiring minds, enjoy their learning and feel proud of their achievements.

Our vision for maths ensures every pupil is given a broad, balanced, engaging and relevant curriculum that takes into account the requirements of the National Curriculum and any other guidance documents.

### **Curriculum Implementation:**

Our mastery approach to the curriculum is designed to develop children's knowledge and understanding of mathematical concepts from the Early Years through to the end of Y6. At Grazeley, we follow the National Curriculum and use White Rose Schemes of Work alongside the NCETM curriculum prioritisation resources as a guide to support teachers with their planning and assessment.

Across the school, we deliver daily fluency lessons which develop children's automaticity and flexibility with their key mathematical facts. The curriculum is progressive and is designed around blocks of learning.

- Our blocks are carefully planned out with small steps for learning. Each year carefully builds upon the skills that have been taught before.
- The calculation policy is used within school to ensure a consistent approach to teaching the four operations over time.
- Children are taught through whole class mixed ability teaching. Daily Interventions are used to help supplement the children's learning.
- To learn mathematics effectively, some things have to be learned before others, e.g. place value needs to be understood before working with addition and subtraction, addition needs to be learnt before looking at multiplication (as a model of repeated addition). Our emphasis is on number skills first, carefully ordered, throughout our curriculum.

Same day intervention is provided for children who are not sufficiently fluent with earlier material to consolidate their understanding.

### **Implementation - Mastery Maths Core Principles**

At Grazeley, we have taken the key components of the mastery approach to teaching mathematics and adapted these to suit the specific needs of our children.

The teaching of Mastery is the focus on the development of deep structural knowledge and the ability to make connections. Making connections in mathematics deepens knowledge of concepts and procedures, ensures what is learnt is sustained over time, and cuts down the time required to assimilate and master later concepts and techniques.

### **Rationale for teaching mastery effectively**

1. A mastery approach; a set of principles and beliefs.

A belief that all pupils are capable of understanding and doing mathematics, given sufficient time. Pupils are neither 'born with the maths gene' nor 'just no good at maths.' With good teaching, appropriate resources, effort and a 'can do' attitude, all children can achieve in and enjoy mathematics.

2. Mastery Curriculum

One set of mathematical concepts and big ideas for all. All pupils need access to these concepts and ideas and to the rich connections between them. There is no such thing as 'special needs mathematics' or 'gifted and talented mathematics'. Mathematics is mathematics and the key ideas and building blocks are important for everyone.

3. A Mastery teaching approach

A set of pedagogical practices that keep the class working together on the same topic, whilst at the same time addressing the need for all pupils to master the curriculum. Challenge is provided through depth rather than acceleration into new content. More time is spent on teaching topics to allow for the development of depth. Carefully crafted lesson design provides a scaffolded, conceptual journey through the mathematics, engaging pupils in reasoning and the development of mathematical thinking.

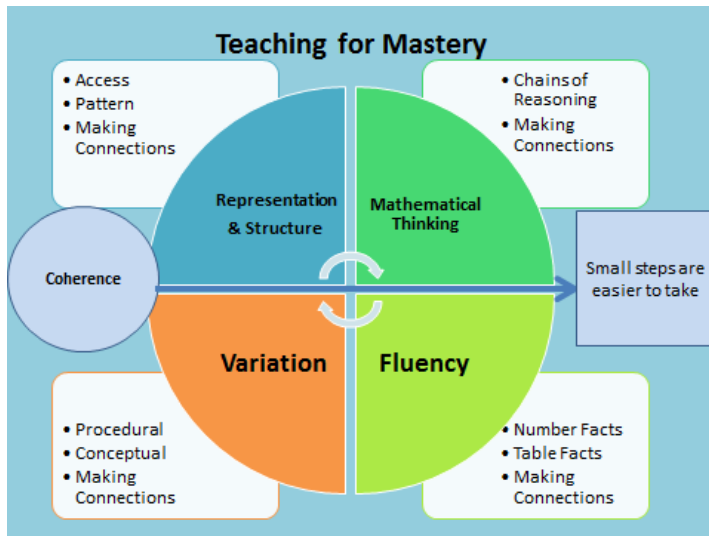
4. Achieving mastery of particular topics and areas of mathematics

Mastery is not just being able to memorise key facts and procedures and answer test questions accurately and quickly. It involves knowing 'why' as well as knowing 'that' and knowing 'how.' It means being able to use one's knowledge appropriately, flexibly and creatively and to apply it in new and unfamiliar situations.

### **A pupil really understands a mathematical concept, idea or technique if he or she can:**

- describe it in his or her own words;
- represent it in a variety of ways (e.g. using concrete materials, pictures and symbols – the CPA approach);
- explain it to someone else;
- make up his or her own examples (and non- examples) of it;
- see connections between it and other facts or ideas;
- recognise it in new situations and contexts;
- make use of it in various ways, including in new situations.

There are 5 Core Principles agreed by the whole school which should be apparent in every classroom for every mathematical concept.



### Coherence:

Lessons are broken down into small connected steps that gradually unfold the concept, providing access for all children and giving them the ability to apply the concept to a range of contexts.

This is otherwise known as micro-planning.

### Representations and Structure:

Representations used in lessons expose the mathematical structure

being taught, the aim being that students can do the maths without recourse to the representation.

As a school we use the CPA approach. This is most effective and can be used in all mathematic topics.

### Fluency

Fluency demands more of learners than memorisation of a single procedure or collection of facts. It encompasses a mixture of efficiency, accuracy and flexibility. Quick and efficient recall of facts and procedures is important in order for learners' to keep track of sub problems, think strategically and solve problem.

### Variation

We do not teach through variation but learn through it instead. By asking the pupils to find similarities and differences, one can observe relationships, observe the variant and invariant properties of the procedure. The opportunity to work on different representations of the same mathematical idea.

### Mathematical Thinking

If taught ideas are to be understood deeply, they must not merely be passively received but must be worked on by the student: thought about, reasoned with and discussed with others.

### Whole School

1. Review – a starter that revisits previous learning (this may be previous knowledge relevant for the learning objective of the maths lesson being taught)
2. A purposeful and meaningful hook to give children with a real life scenario/context
3. Guided/episodic teaching – otherwise known as 'ping pong'. Featuring:
  - Stem sentences
  - Sentence stems
  - Oral rehearsal
  - Use of the CPA model with resources which are providing the appropriate structures
  - Challenge language and questioning throughout

4. Independent practice, which is the same for all children, with conceptual and procedural variation. During the independent practice some children may require additional adult support or scaffolding through questioning and resources.

### **Expectations**

- Review at the start of every lesson – (this may be previous knowledge relevant for the learning objective of the maths lesson being taught)
- Rich mathematical language explained
- Context for the maths lesson which is appropriate, purposeful and meaningful.
- Guided 'ping pong' teaching with use of and access to resources throughout
- Stem sentences and sentence stems – visually available to support children.
- Oral rehearsal of stem sentences
- Progression through the CPA model
- Questioning to support and challenge children's thinking throughout guided teaching
- Use of misconceptions to develop reasoning and understanding
- Independent work, which is the same for all children, with conceptual and procedural variation
- Every child to have whiteboards and whiteboard pens available at all times.
- Whiterose powerpoints adapted for class, also to include- stem sentences, sentence stems, TTYP (talk to your partner), IYB (in your book), Mastery Questions
- Relevant Whiterose SMART notebook resource to be available in conjunction with Whiterose powerpoint.
- APE ( Analyse it, prove it, explain it) – a challenge to deepen children's understanding.
- Challenge/Extensions-snipped from Whiterose topic SOW or NCTEM ready to progress document.

### **EYFS**

#### **KS1**

Children use the Whiterose workbooks to record their work in. They will have an additional maths books were they can complete any supplementary or reasoning and problem solving work.

During soft start, Whiterose Flashback 4 document used 5 days a week.

#### **LKS2**

Children use the Whiterose workbooks to record their work in. They will have an additional maths books were they can complete any supplementary or reasoning and problem solving work.

Year 3- During soft start, Whiterose Flashback 4 document used 5 days a week.

Year 4- During soft start, Whiterose Flashback 4 document used 3 days a week and multiplication activity for 2 days a week.

#### **UKS2**

Children use the White Rose workbooks as textbooks, and use maths books to record their work.

During soft start White Rose Flashback 4 document used 2 times a week, Arithmetic questions 2 times a week and a Reasoning/Problem Solving/SATS question used 1 time a week.

### **Assessment:**

Children are assessed using a range of approaches, with the aim that all pupils including children with SEN, make sufficient progress to meet or exceed age related expectations.

- Allow ongoing formative assessment that identifies what children have learned and allow teachers to adapt the learning journey accordingly. AFL questions are used at the start of a new block of learning to identify misconceptions and gaps in learning. This in turn informs future sequences of planning.
- Teachers carry out cold and hot tasks at the start and end of each block of learning so that gaps can be quickly identified and children struggling to keep up can be given additional support. Also records individual progress of every unit of work.
- Years 1, 2, 3, 4 and 5 use Cornerstones maths assessment every term, provides a standardised score. Year 6 to use past SATS papers.

### **Working with Parents**

We provide regular feedback to parents through termly parents meetings. In addition to this each year will have an opportunity to attend their child's maths lesson and a maths workshop. This will enable parents to see how maths is being taught at Grazeley, while also addressing any misconceptions within their own understanding of mathematical concepts. Thus improving their own ability to help their child with mathematical problems.

Year 3-6 children have access to doodle maths and TTRS.

### **Impact:**

As a result of our Maths teaching at Grazeley you will see:

- Engaged children who are all challenged.
- Confident children who can talk about their learning using mathematical vocabulary and talk the links between mathematical topics.
- Children demonstrate a deep understanding of maths. Concepts or skills are mastered when a child can show it in multiple ways using different representations.
- Each child achieves objectives (expected standard) for year group.
- The flexibility and fluidity to move between different contexts and representations of maths.