Chestnut Lane School
Maths Mastery
Number and Calculation Guide

This policy, focusing on number and calculation, should be read in conjunction with our Teaching, Learning and Curriculum Policy and Whole School Curriculum Content document, which details the Early Learning Goals and National Curriculum statutory requirements for mathematics.

The Early Years Framework

Early learning in number and calculation in Preschool and Reception follows the statutory Early Years framework with guidance from Development Matters, and this policy is designed to build on progressively from the content and methods established in the Early Years Foundation Stage (EYFS).

Mathematics is one of four specific areas for learning and development in the EYFS, which recognises *'a strong grounding in number is essential so that all children develop the necessary building blocks to excel mathematically'.* In addition, the prime area of 'Communication and Language' underpins all seven areas of children's learning. This policy and accompanying progression document prioritises building children's language effectively so that children develop positive attitudes and interests in mathematics, look for patterns and relationships, spot connections, 'have a go' and talk to adults and peers about what they notice while not being afraid to make mistakes.

Through a Mastery approach and engaging curriculum, children work towards Early Learning Goals (ELGs) that they are expected to achieve at the end of their Reception year. Please refer to our Early Years Foundation Stage Policy and Curriculum for more details. We recognise that *it is true that 'maths is everywhere'. But children will not reliably bump into mathematical ideas solely through play and physical exploration.'* [Best Start in Life]. Our EYFS curriculum consists of carefully planned, inviting activities, both as focused tasks and within continuous and enhanced provision, which have clear intended learning goals. Skilled practitioners guide play, draw children's attention to ways of thinking about the world mathematically and encourage children to choose from different options and to follow their own decisions, as appropriate.

The National Curriculum

'A high-quality mathematics education provides a foundation for understanding the world, the ability to reason mathematically, an appreciation of the beauty and power of mathematics, and a sense of enjoyment and curiosity about the subject.' Primary National Curriculum

The National Curriculum for mathematics aims to ensure that all pupils:

- become **fluent** in the fundamentals of mathematics, including through varied and frequent practice with increasingly complex problems over time, so that pupils develop conceptual understanding and the ability to recall and apply knowledge rapidly and accurately;
- **reason** mathematically by following a line of enquiry, conjecturing relationships and generalisations, and developing an argument, justification or proof using mathematical language;
- can **solve problems** by applying their mathematics to a variety of routine and non- routine problems with increasing sophistication, including breaking down problems into a series of simpler steps and persevering in seeking solutions.

In line with our school vision, values and characteristics of learning, our mathematics curriculum teaches children to be curious, resourceful, collaborative and resilient. Teachers make use of the NCETM Mastery Materials to develop their subject and pedagogical knowledge, in combination with other high-quality resources. The mastery approach empowers every child to succeed through interactive lessons and practical activities, providing small, cumulative steps to build a solid foundation of deep mathematical understanding.

Mastering Number Programme

In addition to regularly timetabled maths lessons that are part of our curriculum, children in Reception, Year 1 and Year 2 participate in the Mastering Number Programme.

This national programme aims to secure firm foundations in the development of good number sense, alongside developing children's oracy skills through the use of 'stem sentences'. The aim over time is that children will leave KS1 with fluency in calculation and a confidence and flexibility with number. Attention is given to key knowledge and understanding needed in Reception classes, and progression through KS1 to support success in the future.

Mastering Number content is taught in four short sessions a week, which develop children's fluency and flexibility with number and automatic recall of key number facts. Comprehensive teaching materials for this programme include manipulatives such as rekenreks and tailored use of the popular 'Numberblocks' series. Engaging animated characters introduce concepts of number to support early mathematical understanding and help children bring the numbers and ideas to life in the world around them.

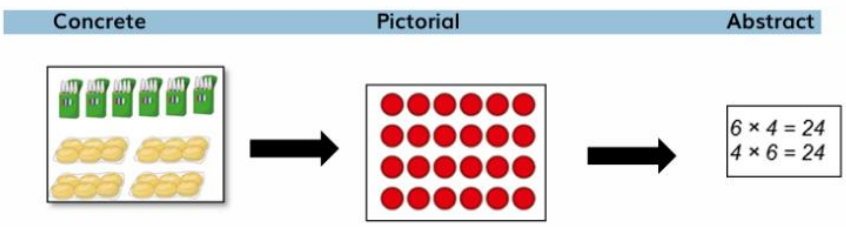
What is Mastery?

- Mastery is the process of ensuring students understand a particular foundational concept before moving to the next one.
- Mastering mathematics means pupils of all ages acquiring a deep, long-term, secure and adaptable understanding of the subject.
- The phrase 'teaching for mastery' describes the elements of classroom practice and school organisation that combine to give pupils the best chances of mastering a subject.

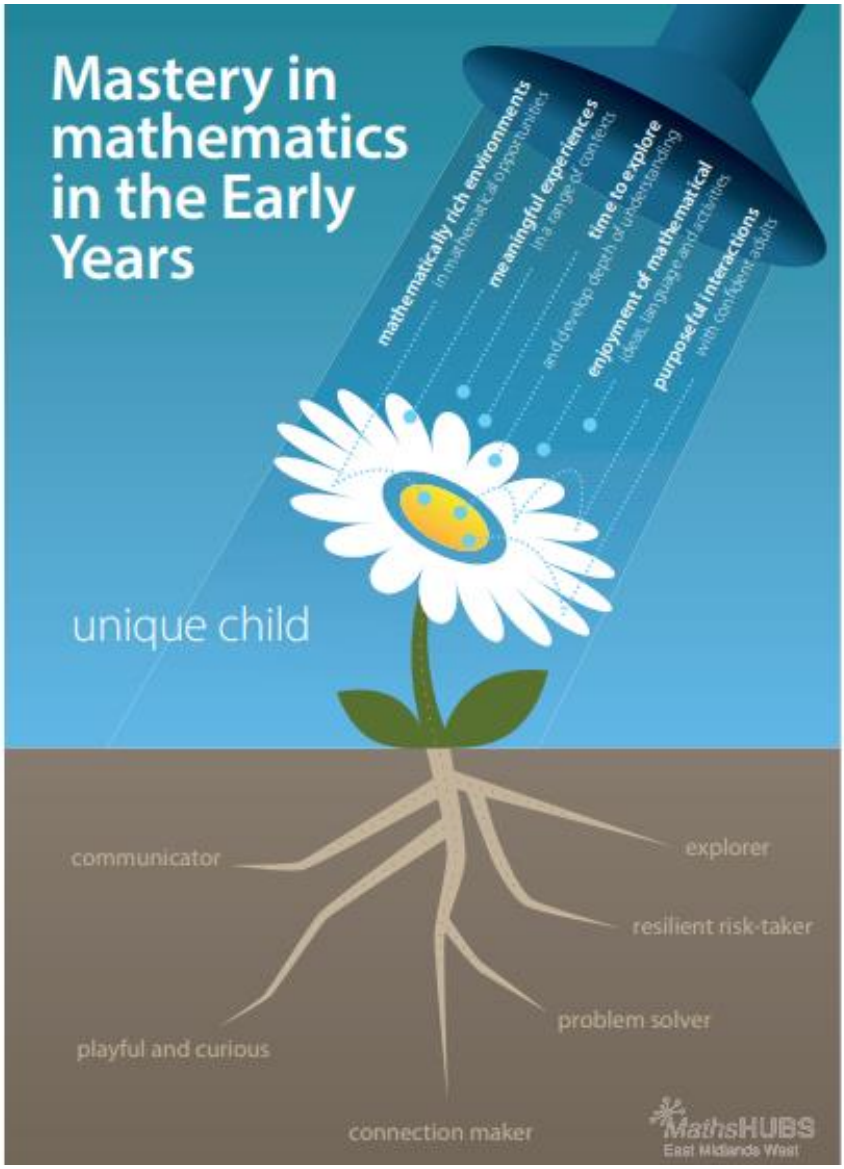
Our mathematics teaching is designed to enable a coherent learning progression, providing access for all children to develop a deep and connected understanding of mathematics that they can apply in a range of contexts. We encourage children to vocalise their mathematical understanding, helping to build on previous learning and communicate their ideas and reasoning using precise mathematical language. Practical (concrete) resources are used to help develop fluency, so children have the flexibility to move between different contexts and representations of mathematics.

Representations: Concrete, Pictorial and Abstract

We recognise that using concrete, pictorial and abstract representations is highly effective in the teaching of mathematics to develop conceptual understanding. Concrete, pictorial and abstract (CPA) concepts should not be viewed as a linear model or as a way to adapt teaching for lower, middle or higher attaining children. CPA is an approach used with the whole class and teachers promote each area as equally valid. The abstract runs alongside the concrete and pictorial stage as this enables pupils to better understand mathematical statements and concepts. Manipulatives and the images are a means for children to understand the symbolic, so it's important to move between all modes to allow children to make connections. The intention is to support children in 'seeing' the mathematics, rather than using the representation as a tool to 'do' the mathematics. These representations become mental images that students can use to think about mathematics, supporting them to achieve a deep understanding of mathematical structures and connections.



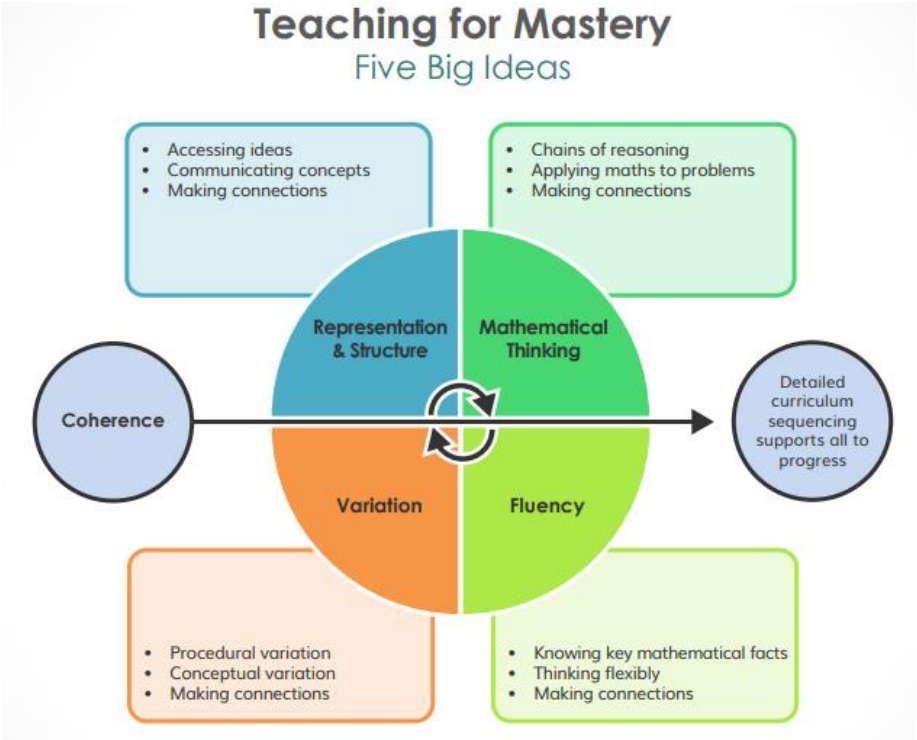
Teaching for Mastery in the Early Years



Principles of Nurturing Mastery in Mathematics in the Early Years

- The characteristics of effective learning are essential to learning and development within mathematics.
- Practitioners enact the belief that all children are effective, competent and secure mathematicians.
- Quality play is essential within a mastery approach in early years.
- In addition to mathematics throughout all areas of provision, all children experience shared mathematics together in focus sessions and through the Mastering Number Programme.
- Adaptive teaching is achieved by emphasising deep knowledge and through individual support, scaffolding and intervention.
- Communication (verbal and nonverbal) is modelled and encouraged in a variety of ways including the careful and precise use of mathematical vocabulary.
- Reasoning mathematically is modelled, planned for and assessed within the child's holistic mathematical development.
- Mathematical thinking is highly valued with an emphasis upon the child's process within activities.
- Concrete, practical experiences underpin mathematical learning.
- Engagement with a range of resources and representations support children to think flexibly and to see multiple ways to approach and solve problems.
- Mastery is achieved through quality time, repetition and extended periods on an aspect of mathematics to enable deeper and more connected thinking (both provided by the practitioners and self-selected by the children).
- Children are provided with carefully chosen examples and problems that help them to see connections and relationships.
- Children are encouraged to approach mathematical challenges with positivity and confidence.

Teaching for Mastery in Key Stage 1



The fundamental characteristics that underpin teaching for mastery in all schools are informed by research evidence and classroom experience. At Chestnut Lane School we aim to ensure staff have a true understanding of these ideas and how they are taught in day-to-day maths teaching.

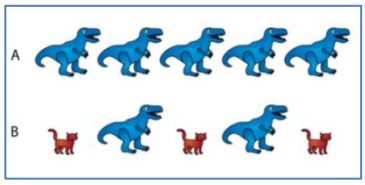
Coherence

• Laying strong foundations on which mathematics can be built. Then building the learning in ways that make sense to children.
• Well planned sequences of lessons are broken down into small, connected steps.
• Start at a point that is accessible for all, keep checking understanding and provide scaffolding for all to achieve.

Representation and Structure

• Maths is abstract: representations provide access and develop understanding.
• Children must be taught to use manipulatives and images to construct meaning.
• The long term aim is to support children to 'see' the mathematics, rather than needing the representation as a tool to 'do' the mathematics.

Variation

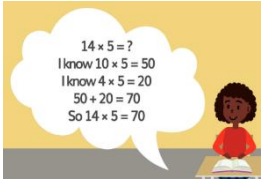


• Consider how a child will proceed through a learning sequence.
• Concepts can be represented in different ways to highlight a key feature: What stays the same/changes? What is it/what is it not?
• Stem sentences can be used as a framework to deepen understanding.

Mathematical Thinking

• Discussing and communicating ideas using precise mathematical language.
• Invite children to 'make sense' of every maths lesson: look for patterns and relationships.
• Explore in detail **how** you reached the answer, **why** the method/strategy worked and what was the **most** efficient method/strategy.

Fluency



• Fast, accurate, effortless recall of facts frees up mental space to think deeply about concepts and problems.
• Flexibility to move between different contexts and recognising connections between them.
• Able to choose the most appropriate methods/strategy to solve a problem.

Chestnut Lane School collaborative staff definitions of the 'Five Big Ideas', June 2025

The Essence of Mathematics Teaching for Mastery in KS1

Underpinning principles

• Mathematics teaching for mastery assumes everyone can learn and enjoy mathematics.
• Mathematical learning behaviours are developed such that pupils focus and engage fully as learners who reason and seek to make connections.
• Teachers continually develop their specialist knowledge for teaching mathematics, working collaboratively to refine and improve their teaching.
• Curriculum design ensures a coherent and detailed sequence of essential content to support sustained progression over time.

Lesson design

• Lesson design links to prior learning to ensure all can access the new learning and identifies carefully-sequenced steps in progression to build secure understanding.
• Examples, representations and models (concrete, pictorial and abstract) are carefully selected to expose the structure of mathematical concepts and emphasise connections, enabling pupils to develop a deep knowledge of mathematics.
• Procedural fluency and conceptual understanding are developed in tandem because each supports the development of the other.
• It is recognised that practice is a vital part of learning, but the practice must be designed to both reinforce pupils' procedural fluency and develop their conceptual understanding.

In the classroom

• Pupils are taught through whole-class interactive teaching, enabling all to master the concepts necessary for the next part of the curriculum sequence.
• In a typical lesson, the teacher leads back-and-forth interaction, including questioning, short tasks, explanation, demonstration, and discussion, enabling pupils to think, reason and apply their knowledge to solve problems.
• Use of precise mathematical language enables all pupils to communicate their reasoning and thinking effectively.
• If a pupil fails to grasp a concept or procedure, this is identified quickly, and gaps in understanding are addressed systematically to prevent them falling behind.
• Significant time is spent developing deep understanding of the key ideas that are needed to underpin future learning.
• Key number facts are learnt to automaticity, and other key mathematical facts are learned deeply and practised regularly, to avoid cognitive overload in working memory and enable pupils to focus on new learning.

Adapted from https://www.ncetm.org.uk/teaching-for-mastery/mastery-explained/the-essence-of-mathematics-teaching-for-mastery/

Summary

A high-quality mathematics education provides a foundation for understanding the world, the ability to reason mathematically, an appreciation of the beauty and power of mathematics, and a sense of enjoyment and curiosity about the subject.

We strive to encourage a love of these things both inside and outside of the classroom as we help our children become successful and proficient young mathematicians, who can solve problems, fluently recall facts and articulate their mathematical thinking.