

“Mathematics is a creative and highly interconnected discipline that has been developed over centuries, providing the solution to some of history’s most intriguing problems. It is essential to everyday life, critical to science, technology and engineering, and necessary for financial literacy and most forms of employment. A high-quality mathematics education therefore 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.” The National Curriculum 2014

At St Alphege CE Infant School, we believe that a deep understanding of key mathematical concepts is essential for our children’s future progress. In order to embed this, children require opportunities to use, apply and problem solve using mathematical knowledge and understanding. This can then also be used and applied within the broader curriculum.

To do this effectively it is essential that the children develop a secure understanding of number and the four number operations (+, -, x, ÷). This year therefore, we are embracing many aspects of the **mastery approach** to mathematics, and using the White Rose Maths materials to support and facilitate this. Mastery is a journey and is about children gaining a deep understanding of a concept.

What are the principles beliefs of a ‘mastery’ approach to mathematics?

Certain principles and features characterise and underpin this approach:

- High expectations and the belief that **all** pupils can achieve. Ability is neither fixed nor innate - it can be developed over time through practice, support, determination and hard work. This builds confidence and resilience to enable all to achieve, not just in maths but across the broader curriculum.
- A whole class approach so that **all** can access and master mathematics.
- Differentiation through highly skilled questioning and levels of individual support and challenge.
- A focus on the development of deep mathematical understanding.
- A focus on the development of both factual/procedural and conceptual fluency.
- Longer time on key topics, providing time to go deeper and embed learning.

Whilst there is no single definitive definition of ‘mastery’, we can say that a concept is deemed ‘mastered’ when through exploration, clarification, practice and application over time, learners can represent it in multiple ways, can communicate solutions using mathematical language and can independently apply the concept to new problems in unfamiliar situations.

We are also now using a **Concrete, Pictorial, Abstract (CPA)** progressive approach to teaching new concepts. **What is the CPA approach?**

The Concrete, Pictorial, Abstract (CPA) is a highly effective way of teaching that develops a deep and sustainable understanding of maths. Whenever a new mathematical concept is introduced, it is done so first through the use of concrete materials, which can be real objects or ‘manipulatives’ such as counters, Numicon or Dienes. This will then progress to be represented by pictures and finally by a number sentence.



CPA Approach	
Stage	Characteristics
Concrete	Refers to the use of manipulatives, measuring tools or objects that the student handles.
Pictorial	Refers to the use of drawings, diagrams, charts or graphs that the student draws
Abstract	Refers to abstract representations such as numbers and letters that the student writes

Maths lessons are interactive, practical and fun! Photos, discussion and drawings capture learning and demonstrate children's next steps. As they progress through Key Stage 1, we continue to support learning practically, but also increasingly through structured written calculations.

Another key element of the Maths National Curriculum is to enable children to explain the way they are thinking about maths. This is called **mathematical reasoning**, and is a focus throughout the school. Through this, we aim to develop children's higher order thinking skills, progressing from describing and explaining, to convincing, justifying and proving. To develop mathematical concepts and language, we model and encourage the use of full sentences when answering questions. Again, this has benefits far beyond maths alone and can be used and applied across the whole curriculum.