



Maths at The Meadows



We study maths at The Meadows because it gives us the knowledge we require every day to make sense of the world around us.

Why do we teach maths?

At the Meadows Primary School, our mission is to ensure that all of our children are provided with the opportunity to **master** mathematics in each year group, through **high quality, inspirational** and **enjoyable lessons**.

Our goal is to make sure that all of our children appreciate the importance of **mathematics in everyday life** and **secure deep foundations** for understanding the world. Mathematical discussion, with an emphasis on using the correct vocabulary (or as we call it, **GMC: Good Mathematical Communication**) plays an essential role in securing and strengthening understanding.

We believe that learning in a **positive atmosphere** where everyone feels happy, safe and valued whilst receiving **effective, purposeful feedback** from both their adults and their peers, children will succeed and develop a **natural love of mathematics**.

We want our children to explore mathematical concepts through **stimulating learning environments** and the use of **practical resources** where they encounter **challenging, creative** and **authentic** learning experiences. We aim to provide pupils with the opportunity to **discover links** and **achieve fluency** between different **mathematical concepts**.

We believe that through providing positive experiences and the **right support** in mathematics **everyone can achieve!**

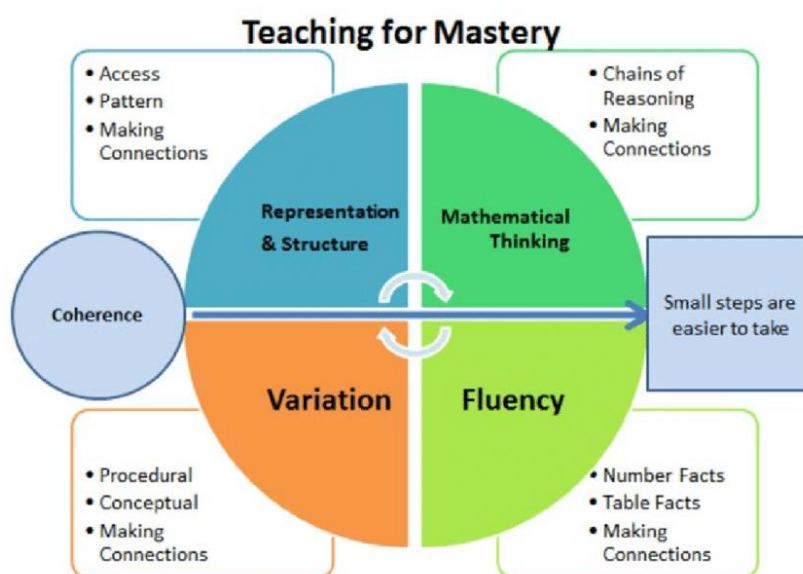


By the end of Year 6, our children will:

- be fluent in the fundamentals of mathematics so that they have developed conceptual understanding and the ability to recall and apply knowledge rapidly and accurately.
- be able to solve problems by applying their mathematics to a variety of problems with increasing sophistication, including in unfamiliar contexts and to model real-life scenarios.
- be able to reason mathematically by following a line of enquiry and develop and present a justification, argument or proof using mathematical language.
- have an appreciation of number and number operations, which enables mental calculations and written procedures to be performed efficiently, fluently and accurately to be successful in mathematics.
- enjoy mathematics, embrace challenge and understand the importance of mathematics in everyday life.

How do we teach it?

We have adopted a 'mastery' approach to the teaching of maths across the whole school. Mastering maths means pupils 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 chance of mastering maths. Achieving mastery means acquiring a solid enough understanding of the maths that has been taught to enable pupils to move on to more advanced materials.



This approach recognises the value of developing the power to think, understand and reason rather than just 'do' using a set of given rules. The fundamental belief is that every child can achieve number fluency, confidence and understanding step by step.

Children are all taught the same concept in their year and the expectation is that all children can succeed. Some children may need extra strengthening teaching whilst others are encouraged to deepen their understanding. Maths mastery recognises the value of making a whole class journey of a concept which is broken down into small steps of learning, one by one. In this way children are building secure foundations which they can build upon and make connections to other areas of maths ensuring deep mathematical understanding and confident mathematicians.

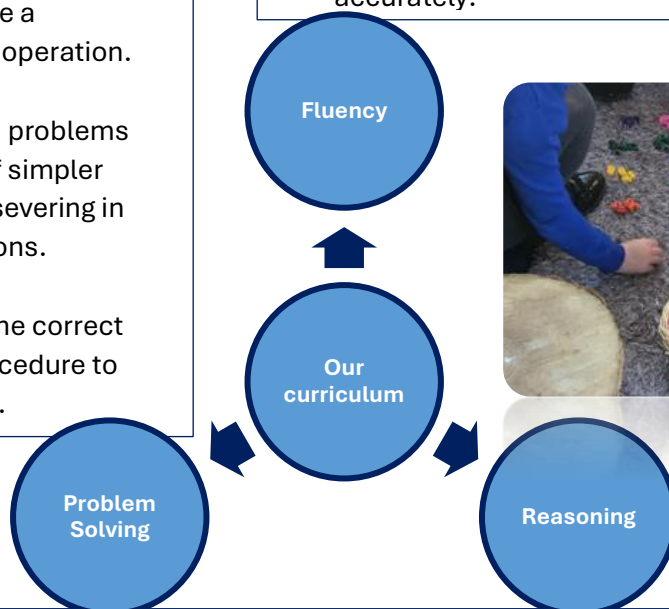
At The Meadows, we use White Rose Maths as a foundation for our lessons and planning and supplement the learning with other, professionally-recognised resources such as Gareth Metcalfe's I See Maths resources. Although we continue to embed a mastery approach to teaching maths throughout the school, we have also carefully restructured the long-term plans to allow for more regular revisiting of blocks of knowledge.



Core concepts of our curriculum

- To apply mathematics to a variety of routine and non-routine problems with increasing sophistication.
- To identify key vocabulary to help indicate a mathematical operation.
- To break down problems into a series of simpler steps and persevering in seeking solutions.
- To decide on the correct method or procedure to solve problem.

- To develop number sense and be able to choose the most appropriate method for the task at hand.
- To apply a skill to multiple contexts.
- To be able to recall and apply knowledge rapidly and accurately.



- To develop mathematically and think critically.
- To follow a line of enquiry and gather information.
- To interpret information to solve problems, conjecture relationships and generalisations.
- To make an informed decision based on what is known and develop an argument, justification or proof.
- To communicate ideas effectively using mathematical language.

NCETM Five Big Ideas

Coherence

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

Representation 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. There is a consistent approach to the resources used within lessons to make sure the children are comfortable and familiar with each resource throughout their maths journey. Designated maths areas in each classroom help build independence in maths.

Mathematical Thinking

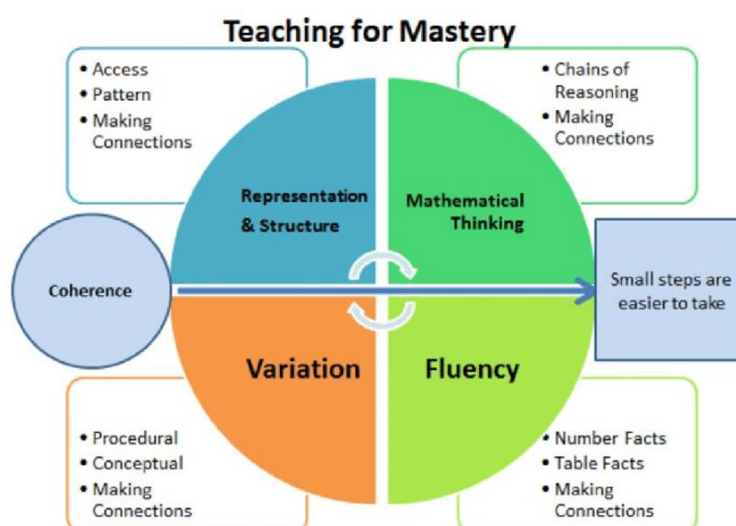
If taught ideas are to be understood deeply, they must not merely be passively received but must be worked on by the student: thought about, reasoned with and discussed with others. A clear progression map of vocabulary in each year group supports children to build up age-related vocabulary, which in turn aims to enhance their ability to discuss maths in more depth.

Fluency

Quick and efficient recall of facts and procedures and the flexibility to move between different contexts and representations of mathematics. The Mastering Number Programme, 'Daily 5' activities and daily times tables sessions help strengthen children's recall skills.

Variation

Variation is twofold. It is firstly about how the teacher represents the concept being taught, often in more than one way, to draw attention to critical aspects, and to develop deep and holistic understanding. It is also about the sequencing of the episodes, activities and exercises used within a lesson and follow up practice, paying attention to what is kept the same and what changes, to connect the mathematics and draw attention to mathematical relationships and structure.

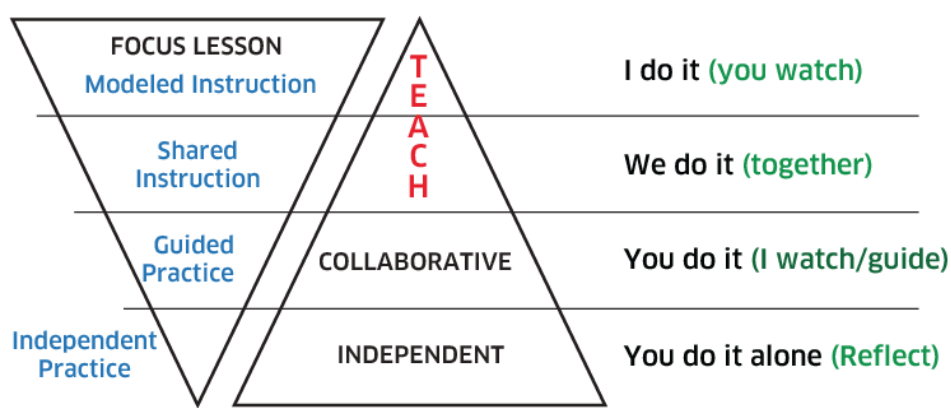


What does a maths lesson look like?

Each lesson has a progression, with a central flow that draws the main learning into focus. There are different elements, informed by research into best practice in maths teaching, that bring the lessons to life:

- **Retrieval practice starter**
- **Discover – ‘I do’**
- **Think Together – ‘we do’**
- **Intelligent Practice – ‘You do’**
- **Reflect and challenge (Plenary)**

TEACHER RESPONSIBILITY



STUDENT RESPONSIBILITY

Retrieval practice starter

Children will have the opportunity to ‘warm up’ for their maths lesson using a mix of mental maths skills and retrieval practice from previous areas of learning. This content may be fluency or knowledge from a previous year group or phase, or from prior content that could link. For example, negative numbers prior to teaching co-ordinates.

This aims to:

- Revise previously taught content;
- Practice content that supports new teaching for the coming lesson;
- Activate prior knowledge which links with new content in order to create rich mathematical links.

Discover – ‘I do’

The core content of each lesson will be introduced by the teacher and explored using a variety of representations and structures. Within the principles of mastery, the children develop mathematical thinking and reasoning by being given the opportunity to explore. This could include a range of concrete resources and visual representations in order to identify the essence of a concept. What do you notice? What stays the same? What changes? Children will be given the opportunity to develop their understanding of a concept following the CPA approach to represent the same question in a variety of ways, rather than looking at a variety of questions in

an abstract manner. Teachers will also make sure all key mathematical language needed for lesson has been introduced and understood (GMC).

In this part of a lesson, children will:

- Have the opportunity to discover the learning for themselves – exploration;
- At some point, from someone, receive a crystal-clear explanation – partner work and generalisation;
- Develop their understanding through a range of representations – concrete and pictorial;
- Have the chance to develop the skills of a good mathematician – including both procedural and conceptual fluency;

Think Together – ‘we do’

The class shares their ideas and compares different ways to solve examples and problems, explaining their reasoning with hands-on resources and drawings to make their ideas clear. Children are able to develop their understanding of the concept with input from the teacher. This is a journey through the concept, digging deeper and deeper so that each child builds on secure foundations while being challenged to apply their understanding in different ways and with increasing independence.

Partner talk supports children in developing a deep understanding of a concept. This section of the lesson reduces the scaffolding and allows children to focus on a concept through a variation.

In this part of a lesson, children will:

- Have the chance to practice the new content in a range of contexts with a partner for support.
- Master the new content before the next lesson.
- Reduce the amount of scaffolding used to support children.
- Share their learning with their partner and the class, guided by discussion with the teacher.
- *During the think together tasks, the teacher has the first opportunity for instant intervention. Children identified through the discover task and the early think together tasks can have additional teaching on a 1-2-1 or small group basis.*

Intelligent Practice – ‘You do’

Now children practice individually or in small groups, rehearsing and developing their skills to build fluency, understanding of the concept, and confidence. The children develop fluency with a concept through deliberate practice. Practice that is deliberate and planned with thought to procedural variation further aims to reveal the underlying principles of a concept. When well planned, this can support teachers in identifying misconceptions and providing efficient and effective intervention. It is important that children are provided with sufficient time (no less than 20 minutes) to tackle their intelligent practice challenges.

In this part of a lesson, children will:

- Independently apply their learning in both familiar and unfamiliar problems;
- Explore real life problems, making links between the problem and times where they may have encountered similar scenarios;
- Extend their knowledge and understanding by tackling more difficult, abstract problems;
- Creatively develop their methods and problems;

- Explore and reason about mathematical statements and their own further lines of enquiry.

In Key Stage One, live marking takes place immediately and verbal discussions are used to correct misconceptions and mistakes. In Key Stage Two, some live marking will take place for pupils working within a guided group or focus group, however same day intervention is also used for other pupils who may need to correct misconceptions or who require some extra support.

- *Teachers and/or teaching assistants will ‘live mark’ to identify errors and misconceptions as early as possible. This early intervention could be through additional scaffolding of a problem, 1-2-1 re-teaching or small guided groups being formed and supported by an adult. Some children may have errors to correct where they have miscalculated as opposed to misunderstanding a concept.*

Reflect and challenge (Plenary)

The plenary of the lesson has two main aims;

- Allow children time to **reflect** on their learning through discussion and demonstrations.
- **Challenge** the children with a problem which requires more than just the day’s core content. This could lead into the next lesson or/and link to previous learning.

How do we measure success?

Our medium-term plans set out expectations for learning in each year group, and the specific knowledge and vocabulary children will learn at each stage. The ‘spiral’ approach outlined earlier allows teachers to review learning regularly and address any misconceptions that may arise.

Our maths leader supports staff in the assessment process and takes an overview of whole-school attainment. Mid-year assessments throughout the school provide a ‘snapshot’ of progress and intervention programmes and tutoring may be used to help children who have missed teaching to catch up. Formal national assessments in maths are completed by children in Year 2 and Year 6, and these results are shared with parents and carers.

Our maths leader also monitors the curriculum by reviewing children’s work, visiting teaching sessions when possible and talking to staff and children about learning taking place. Assessments of children’s understanding are completed during teaching sessions.

