



MATHS POLICY 2022 - 2024

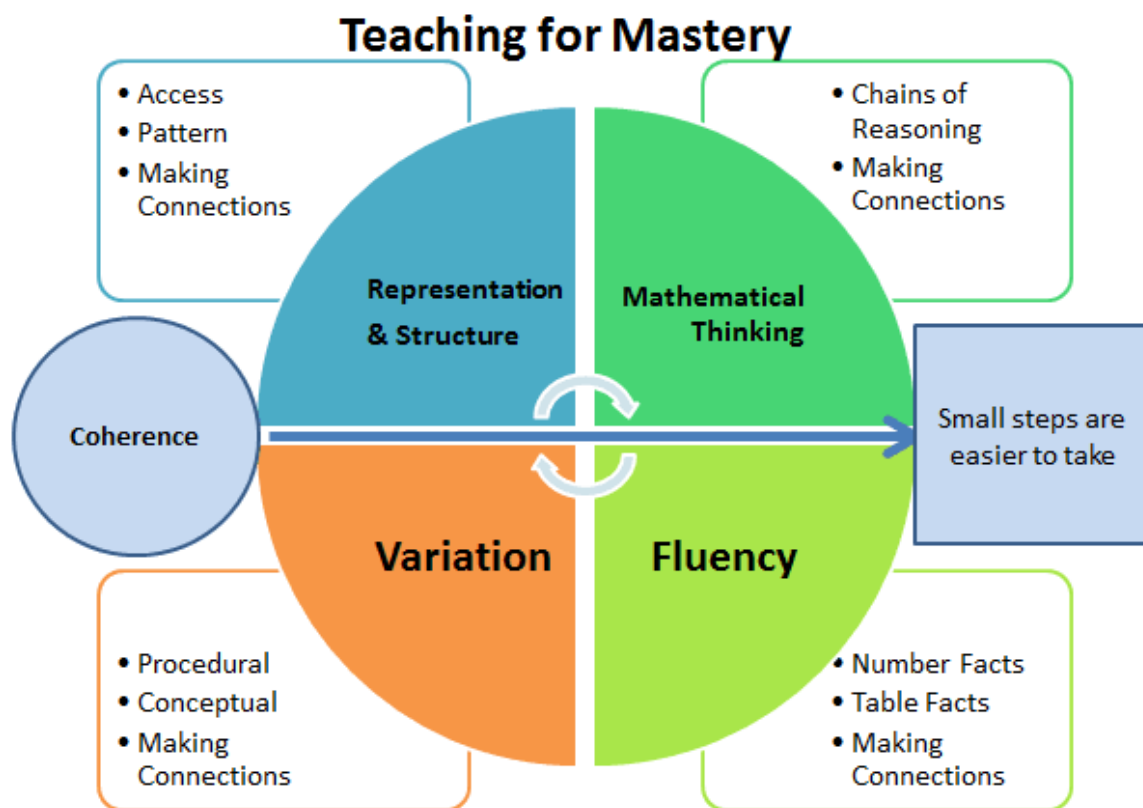
*Everyone who works with children should always do what is best for the child (Article 3)
Every child has the right to an education (Article 28)*

UN Convention on the Rights of the Child

1. Key Principles - Intent

1.1 At Harlow Green Community Primary School, we use a teaching for mastery approach.

1.2 Maths teaching for mastery supports the idea that everyone can do maths. All pupils are encouraged by the belief that by working hard at maths they can succeed.



2. Principles of a Maths Mastery Approach

2.1 To establish:

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.

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.

Fluency

Quick and efficient recall of facts and procedures and the flexibility to move between different contexts and representations of mathematics.

Variation

This 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.

3. Aims

3.1 We aim to develop lively, enquiring minds encouraging pupils to become self motivated, confident and capable in order to solve problems that will become an integral part of their future. 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 have conceptual understanding and are able to recall and apply their knowledge rapidly and accurately to problems
- 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.

4. Implementation

4.1 Pupils in Key Stage 1 have a daily Maths lesson lasting between 50 minutes and 1 hour. Pupils in Key Stage 2 have a daily Maths lesson lasting approximately 1 hour.

4.2 Long term planning

The National Curriculum for Mathematics 2014, Birth to 5 Matters 2021 and the Early Learning Goals (Number, Numerical Patterns) provide the long-term planning for mathematics taught in the school.

4.3 Medium term planning

Year 1- Year 6 teachers use the White Rose schemes of learning, as well as a number of other resources to create medium-term plan for each block. They support a mastery approach to teaching and learning and have number at their heart. They ensure teachers stay in the required key stage and support the ideal of depth before breadth. They support

pupils working together as a whole group and provide plenty of time to build reasoning and problem-solving elements into the curriculum.

4.4 **Short term planning**

Lessons are planned using a WALT (What am I learning today) which sets out the key learning in the lesson. The WILF (What I am looking for) is shared with the class during the lesson so that children can assess whether they have been successful.

4.5 **Concrete/Pictorial/Abstract Approach**

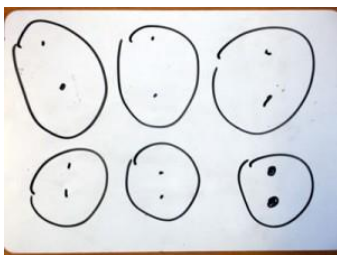
Concrete representation

The children are first introduced to an idea or a skill by acting it out with real objects. In division, for example, this might be done by separating apples into groups of red ones and green ones or by sharing 12 biscuits amongst 6 children. This is a 'hands on' approach using real objects and it is the basis for conceptual understanding. Concrete apparatus such as numicon, double sided counters, base 10 apparatus and place value counters are used widely across school.



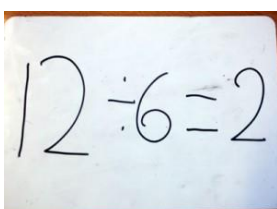
Pictorial representation

This is used when a child has sufficiently understood the hands-on experiences performed and can now relate them to representations, such as a diagram or picture of the problem. In the case of division this could be the action of circling objects.



Abstract representation

The symbolic stage – a student is now capable of representing problems by using mathematical notation, for example: $12 \div 6 = 2$. This is clearly the more confusing and mysterious of the three and without the 'hands on' and pictorial steps can be tricky for children to understand.


$$12 \div 6 = 2$$

5. Additional teaching

- 5.1 In addition to a daily Maths lesson, there are other timetabled sessions within the school week where the children develop mental fluency, practice recall of number facts and specific procedures as part of arithmetic. In these sessions, teachers use digital technologies such as MyMaths, Numbots, Times Table Rock Stars, games, worksheets, concrete apparatus etc.
- 5.2 Maths Intervention is carefully planned for specific pupils within each year group and predominantly focuses on:
- Learning number bonds and counting
 - Recall of multiplication and division facts
 - Arithmetic procedures
 - Solving one and two step word problems

Children practise these skills for a short time period (5 mins approx.) 3 or 4 times per week.

6. Maths in the Early Years

- 6.1 Teachers in the EYFS ensure the children learn through a mixture of adult led activities and child-initiated activities both inside and outside of the classroom. Mathematics is taught through an integrated approach. This is supported by the Birth to 5 Matters non statutory guidance as well as White Rose Medium term plans for EYFS Maths and the NCTM Mastering Number resources.
- 6.2 The EYFS Framework in relation to mathematics aims for our pupils to achieve the following Early Learning Goals:

ELG: Number

- develop a deep understanding of number to 10, including the composition of each number.
- Subitise up to 5.
- Automatically recall number bonds up to 5 and some number bonds up to 10, including double facts.

ELG: Numerical Patterns

- Verbally count beyond 20, recognising the pattern of the counting system.
- Compare quantities up to 10 in different contexts, recognising when one quantity is greater than, less than or the same as the other quantity.
- Explore and represent patterns within numbers up to 10, including evens and odds, double facts and how quantities can be distributed equally.

In addition, the curriculum includes rich opportunities for children to develop their spatial reasoning skills across all areas of mathematics including shape, space and measures.

7. Home Learning

- 7.1 MyMaths is a fully interactive online mathematics learning tool for children and is used by teachers to support mathematics learning both in school and at home for pupils in Year 1 – Year 6. Children are set home learning tasks which consolidate skills taught in school.

7.2 Numbots supports the teaching of number bonds and recall of number facts. Times Table Rock Stars is a carefully sequenced programme of daily times tables practise used in Key Stage 2.

7.3 Practical mathematical activities are set as home learning tasks for EYFS pupils on Tapestry.

8. Marking and Feedback

8.1 Children mark their own work so that they are able to see immediately whether they have succeeded in their learning. This takes place at different points within the lesson and where the teacher deems it is appropriate. During or at the end of the lesson, the children assess whether they have met the WILF. The teacher marks some pupil's books in detail, giving them a focussed challenge or area to practise at the beginning of the next lesson.

8.2 Verbal feedback is provided to children continuously throughout the lesson. Staff may annotate pupils work to provide further scaffolds and modelling.

9. Assessment

9.1 Assessment is an integral part of teaching and learning and is a continuous process. Teachers make assessments of pupils daily through:

- regular marking of work
- analysing errors and picking up on misconceptions
- asking questions and listening to answers
- facilitating and listening to discussions
- making observations

These ongoing assessments inform future planning and teaching. Lessons are adapted readily and short term is planning evaluated in light of these assessments.

9.2 Summative assessments are carried out across school every term using National test style assessment materials. These scores, alongside judgements made from class work support the teacher to assess whether a child is meeting age related expectations.

9.3 In EYFS, children are measured at the end of Foundation stage against the Early Learning goals criteria for the mathematics specific area of development and are graded as 'emerging' or 'expected' for number and numerical patterns Early Learning Goals.

10 Special Educational Needs

10.1 Pupils identified on the SEND register are assessed against National Curriculum Age related expectations in the year group in which they are in or from an earlier year group. Some children are assessed using the PIVATS document (pre-National Curriculum Levels).