**Moorlands Primary School**

**"Anything is Possible!"**

**Mathematics Policy**

**Introduction**

This policy outlines the teaching, organisation and management of the Mathematics at Moorlands Primary School. The school's policy for Mathematics is based on the National Curriculum 2014. The implementation of this policy is the responsibility of all the teaching staff.

Moorlands Curriculum is designed with the purpose that:

**Language + Questioning = Communication.**

The teaching and learning in Mathematics follows our teaching and learning policy which is based on the Rosenshine's principles of instruction (2012).
These are drawn from the following three sources:
1. Research in cognitive science
2. Research on the classroom practices of master teachers
3. Research on cognitive support to help pupils learn complex tasks

**What is Mathematics?**

Mathematics teaches us how to make sense of the world around us through developing a pupil's ability to calculate, to reason and to solve problems. It enables pupils to understand and appreciate relationships and pattern in both number and space in their everyday lives. Through their growing knowledge and understanding, pupils learn to appreciate the contribution made by many cultures to the development and application of mathematics.

**Purpose:**

The National Curriculum states that: "Mathematics is a creative and highly inter-connected 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."

At Moorlands Primary School, we believe Maths is learning that is relevant to their world and applicable to everyday life as well as being something that they will need as they move on through their school life and ultimately to the world of employment. A high-quality Maths experience should be one that develops the children's ability to think mathematically and one which allows them to apply the tools to which they have been exposed in a variety of ways.

Following the National Curriculum, mathematical teaching allows pupils to:

- Become FLUENT
- REASON and EXPLAIN mathematically
- SOLVE PROBLEMS

This means children are regularly exposed to opportunities involving increasingly complex problem solving and reasoning which allows them to apply their Maths knowledge. In doing so they are encouraged to develop an argument which they can prove and justify using mathematical vocabulary. This includes the ability to break down problems, both routine and non-routine, into a series of steps.

**How does Mathematics look at Moorlands?**

Mathematical teaching at Moorlands:

- delivers Maths in line with the National Curriculum guidelines providing a variety of strategies and visuals – concrete, pictorial and abstract: the school's CPA policy outlines this in further depth.
- ensures the delivery provides reasoning opportunities
- creates a lively, exciting and stimulating environment in which the children can learn Maths
- develops a learning experience where pupils are able to adapt their method choice whether that is using formal, informal or mental strategies
- encourages children to use mathematical vocabulary to reason and explain
- allows time recollection of prior knowledge, making links to other curriculum areas and prior learning; talk is used to stimulate links in learning and develop a deeper understanding for Mathematical methods
- challenges are selected to stretch pupils in their understanding and justification

Moorlands Primary School uses the White Rose medium term structure and uses the White Rose small steps to support progressive maths teaching. Visuals and a calculation policy based on these small steps are used throughout the school. The school places a high importance on progressive maths teaching and believes strong foundations in maths is required in order to be successfully built upon.

All maths lessons make links to prior learning; this supports the Rosenshine principes of memory recall. This may be done through a class discussion in response to an anchor question or through discussion generated by a model provided. There is a heavy focus on place value and number in the Autumn Term; this provides skills that pupils apply to other mathematical blocks across the year. During maths lessons teachers encourage children to verbalise their actions, and explain their thinking, asking a range of mathematical questions.

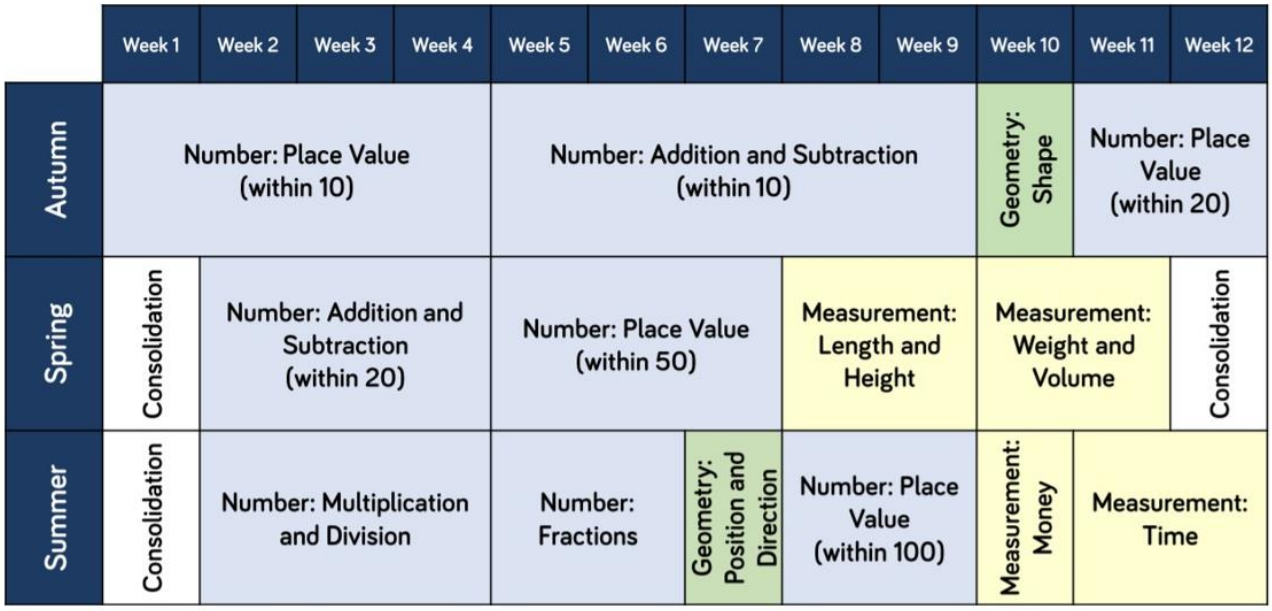
Each classroom has a maths area in their classroom where there are mathematical resources such as number lines, number squares and concrete apparatus to support their learning. We encourage the children to use these to support their mathematical understanding. Within lessons, Years 1-6, teachers are expected to follow our Mathematical lesson structure (lesson starter to allow opportunity to revisit fluency, sharing/discussion of learning objective, sharing/discussion vocabulary, links made to prior learning). A daily mathematical starter allows a fluency or knowledge recall opportunity; this may be a key skill for the lesson or revisiting previous knowledge (use of Flashbacks can be a tool from White Rose for this) - this is guided by the teacher assessment of the needs of the class. Success criteria in KS1 is presented in a visual manner to support pupil access.

**Key stage 1 – Mastering Number NCETM**

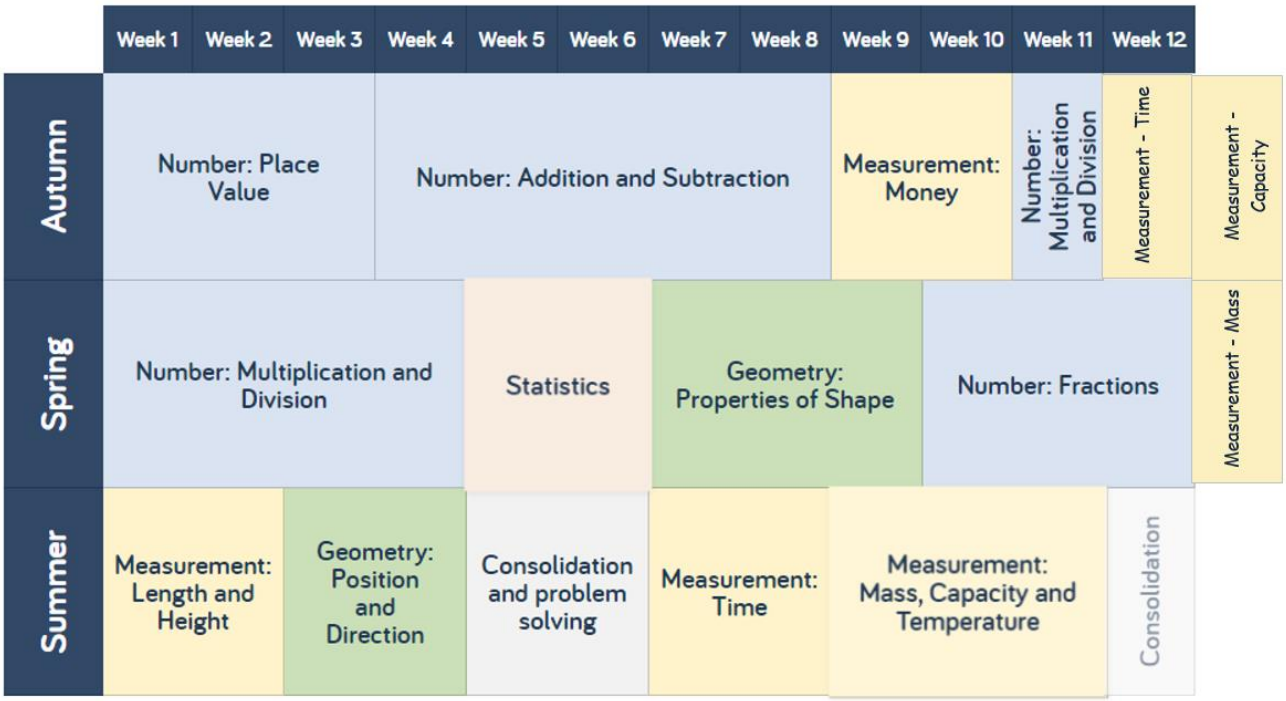
In addition to the whole school maths lesson structure, EYFS and Key Stage 1 focus on mastering number. This programme develops solid number sense, including fluency and flexibility with number facts. Teachers deliver a daily session of 10 to 15 minutes in addition to their daily maths lesson with practical resources and visuals.

**Maths Overview of main maths lessons:**

## Year 1




## Year 2



## Year 3

| | Week 1 | Week 2 | Week 3 | Week 4 | Week 5 | Week 6 | Week 7 | Week 8 | Week 9 | Week 10 | Week 11 | Week 12 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Autumn | Number: Place Value | | | Number: Addition and Subtraction | | | | | Number: Multiplication and Division | | | |
| Spring | Number: Multiplication and Division | | | Measurement: Money | Statistics | | Measurement: Length and Perimeter | | | Number: Fractions | | Consolidation |
| Summer | Number: Fractions | | | Measurement: Time | | | Geometry: Properties of Shape | | Measurement: Mass and Capacity | | | Consolidation |

## Year 4

| | Week 1 | Week 2 | Week 3 | Week 4 | Week 5 | Week 6 | Week 7 | Week 8 | Week 9 | Week 10 | Week 11 | Week 12 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Autumn | Number: Place Value | | | | Number: Addition and Subtraction | | | Measurement: Length and Perimeter | | Number: Multiplication and Division | | |
| Spring | Number: Multiplication and Division | | | Measurement: Area | Number: Fractions | | | | Number: Decimals | | | Consolidation |
| Summer | Number: Decimals | | Measurement: Money | | Measurement: Time | | Statistics | Geometry: Properties of Shape | | Geometry: Position and Direction | | Consolidation |

## Year 5

| | Week 1 | Week 2 | Week 3 | Week 4 | Week 5 | Week 6 | Week 7 | Week 8 | Week 9 | Week 10 | Week 11 | Week 12 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Autumn | Number: Place Value | | | Number: Addition and Subtraction | | Statistics | | Number: Multiplication and Division | | | Measurement: Perimeter and Area | |
| Spring | Number: Multiplication and Division | | | Number: Fractions | | | | | | Number: Decimals and Percentages | | Consolidation |
| Summer | Consolidation | Number: Decimals | | | Geometry: Properties of Shape | | | Geometry: Position and Direction | | Measurement: Converting Units | | Measurement: Volume |

## Year 6

| | Week 1 | Week 2 | Week 3 | Week 4 | Week 5 | Week 6 | Week 7 | Week 8 | Week 9 | Week 10 | Week 11 | Week 12 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Autumn | Number: Place Value | | Number: Addition, Subtraction, Multiplication and Division | | | | | Number: Fractions | | | | Geometry: Position and Direction | Geometry - shape |
| Spring | Number: Decimals | | Number: Percentages | | Number: Algebra | | Measurement: Converting Units | Measurement: Perimeter, Area and Volume | | Number: Ratio | | Consolidation | Geometry - shape |
| Summer | Statistics | | Geometry: Properties of Shape | | | Consolidation and themed projects | | | | | | | |

**Continuity and Progression:**

The use of the White Rose medium term structure supports a mastery approach to teaching and learning inline with the aims and objectives of the National Curriculum. The overviews have number at their heart which allows a large proportion of time reinforcing number to build competency ensuring the ideal of depth before breadth. It also provides opportunity to build reasoning and problem solving elements into the curriculum. Teachers use the White Rose small steps and resources from Power Maths and the NCETM mastery documents in addition to wider resources to support in-class teaching.

KS2 continues to work with the NCETM Maths Hub to develop reasoning opportunities; upper KS2 has been a focus for this hub work.

**The Foundation Stage**

"Developing a strong grounding in number is essential so that all children develop the necessary building blocks to excel mathematically. Children should be able to count confidently, develop a deep understanding of the numbers to 10, the relationships between them and the patterns within those numbers." EYFS Framework September 2021.

Daily maths sessions in Reception are taught using the NCETM mastering number programme to support a strong sense of number. In addition to this, mathematical opportunities are provided through independent learning, rhymes, stories and song. White Rose materials support this independent and additional maths learning to the mastering number session. Here, pupils are supported to look for patterns and relationships, spot connections and to develop mathematical talk. Manipulatives such as ten frames, counting equipment are used to support early number concepts.

**Assessment and Feedback**

In order to inform planning and to assess children's progress, teachers will maintain an assessment grid which tracks the children's progress and understanding across a range of assessment criteria objectives. A child-friendly version of their learning is in the front of pupil maths books and is highlighted by pupils as they feel they achieve objectives.

Termly, pupils are assessed through the application of tests; this summative assessment will be used in conjunction with the assessment grids to identify next steps and therefore inform planning. Nfer tests are conducted which allows teachers to monitor progress and identify patterns in pupils' learning.

Within daily maths sessions, pupils are provided with feedback either verbally or through written marking. In line with Moorlands Marking and Feedback policy and in order to clarify understanding of a concept, children will be set gap tasks; these should be completed by the children at the next earliest opportunity after the lesson. When marking work teachers should adhere to the school's Feedback and Marking Policy.

Pupils are guided in self-assessment to become reflective of their own mathematical learning. There are differentiated sentence stems for Years 1 and 2, 3 and 4, 5 and 6 to guide this reflection and encourage them to think about past learning.

Assessment of multiplication fluency facts is made through the use of multiplication baselines – this may be written or using online software. Heat Maps support teacher assessment of cohorts and individual pupils using TT Rockstars.

**Monitoring and Review**

Monitoring of the standards of pupil work and of the quality of teaching in Mathematics is the responsibility of the Maths lead. The Maths lead provides feedback to staff indicating both areas of strengths and further areas of development. The work of the Maths lead also involves supporting colleagues in the teaching of Mathematics, being informed about current developments in the subject, and providing a strategic lead and direction for the subject in the school. Curriculum updates are shared at the Pupil and Curriculum Committee formed by members of the governing body. Pupils will be consulted to gain a 'pupil voice'.

**Home – School links**

At the beginning of each term, parents are provided with a Curriculum Newsletter which informs parents of the Mathematical concepts being taught. Mathematics homework is set in accordance with the schools Homework Policy. Homework includes the playing of mathematical games, completing mathematical tasks or improving their knowledge and understanding of maths facts and the multiplication tables. Home learning is encouraged and celebrated through the use of Mathletics and TT Rockstars in KS1 and through Century Tech and TT Rockstars in KS2.

**Inclusion**

In line with the School's Inclusion Policy each pupil has an equal entitlement to all aspects of the Maths curriculum and to experience the full range of Maths activities. Therefore, in delivering Maths, care will be taken to ensure that a variety or learning styles are accessed and teaching methods adopted. Intervention groups will take place both within the Maths lesson and outside; these sessions may be delivered by the teacher or teaching assistant and may involve individual or small group work, accessing both ends of the learning spectrum.

Interventions may include:

- Sandwell Numeracy Intervention
- 5 minute number box
- Multiplication support
- On Target higher ability reasoning

Within lessons, the special education needs of the individual child should be considered and appropriate support implemented as required. Staff are encouraged to teach through a low threshold but high ceiling approach to prevent limiting any pupil progress.