

Moorfield School Maths Policy

Whole School Vision and Purpose of maths in our school

At Moorfield School, we implement a curriculum which provides small steps in learning, each element building on the next. We ensure that our curriculum plans, teaching approaches and pupil tasks align to ensure that pupils learn effectively, ensuring proficiency in the facts, the methods and the strategies. We aim to provide for overlearning and tasks given should enable children to be successful.

We believe maths is essential to everyday life. A high-quality mathematics education therefore provides a foundation for understanding the world, the ability to reason mathematically helping us to solve problems in a wide variety of situations.

Aims (to enable us to achieve this vision)

Confident learners who can reason, become fluent in the fundamentals of maths and solve problems through...

- High quality curriculum, leading to quality teaching and learning, with opportunities to practice, reason and apply mathematical concepts to wider problem solving.
- The provision of Small Steps planning in the White Rose progression maps, used alongside the worksheets for the promotion of models and images where appropriate. We also use Target Maths to aid fluency, as well as other reputable published resources in line with the Small Steps in White Rose.
- Adopting a 'Keep up not catch up' approach, but also ensuring that any gaps in pupils' procedural knowledge is addressed at the earliest possible opportunity.
- The implementation of Number Sense in EYFS and KS1 to ensure a deep understanding of number and number relationships and develop fluency in addition, subtraction, multiplication and division.
- Daily 'Fluency Grids' providing a short, discrete session of extra practice, recalling previous concepts and rehearsing knowledge.
- A key facts document for each year group, breaking down the key facts we want children to be proficient in at the end of each half term and across the year.
- A problem solving approach using White Rose problems which contain each of the 4 types of problems; logic, finding all possibilities, word problems and patterns and rules.
- We ensure children are taught the most efficient methods, ensuring they have enough practice in this method before applying this to problem solving tasks.
- We ensure that pupils practice and consolidate new learning through well designed exercises found in White Rose, Target Maths or reputable resources.
- The use of Century, an online learning platform is used regularly in class and as part of homework tasks for Year 3 upwards.
- Providing pre-teaching for children with SEND or those that need additional support.
- Booster groups provide additional support, primarily to SEND children.

- We use the concrete, pictorial, abstract approach where appropriate, ensuring that we do not overload children with too many examples of the same concept.
- We ensure that we go beyond the National Curriculum agenda to include additional models such as the bar model, progression in algebra to enrich the curriculum and creativity.

Mastery Statement

We believe that all children can and will achieve in mathematics and that all pupils should be taught the same content at the same time, spending longer on topics to embed learning. Children achieving mastery will be conceptually secure, they will have a secure knowledge of maths, understand the strategies needed and work with skill to complete a given task.

We will offer depth, through rich and sophisticated problems. The aim will be to change the dialogue and strengthen the mathematical thinking. We will offer rapid intervention for those pupils who need it.

How Learning is structured

At Moorfield School we want to develop children's knowledge, skills and understanding in interesting ways. We do this through daily maths lessons which follow a small steps progression plan. This, alongside fluency opportunities found in Target Maths as well as additional resources aligned to White Rose, provide children with a curriculum rich in knowledge and practice. We ensure children have a high degree of challenge and plenty of opportunity to apply new and existing skills. During lessons we encourage children to ask as well as answer mathematical questions. We believe questioning is an important part of our mathematics teaching, encouraging children to think deeper about the concepts being taught. We provide opportunities to use a wide range of resources to support their work and thinking where appropriate, ultimately encouraging pupils to work independently without the use of scaffolds. Children and teachers use ICT in maths lessons where it will enhance their learning and assist with modelling ideas and methods. We regularly use Century, an online learning platform to consolidate concepts taught and provide homework opportunities.

Wherever possible, we encourage children to apply their learning in everyday situations in order to give context to new and existing concepts. They also apply their mathematics to a wide range of curriculum areas, such as during PE, when cooking, to a text they have read in literacy as stimulus, when calculating distances in geography.

The children feel safe to explore a wide range of problems and are taught strategies and the most useful combination of facts and methods to solve each type of problem. All children work with squared paper books with the exception of Reception, this ensures careful presentation, enhances understanding and addresses misconceptions.

Breadth of study

Teaching in the Foundation Stage

The children in the Foundation Stage are supported to develop and improve their skills in counting, understanding and using numbers, calculating simple addition and subtraction problems; and to describe shapes, spaces and measures.

EYFS teachers follow the EYFS Statutory Framework to ensure that children have the necessary mathematical understanding that will underpin future learning. Practitioners plan both structured activities, and time for child initiated activities, which enable the children to practise skills and gain confidence and competence in their use.

Within the planning for, and teaching of mathematics, staff ensure that there are opportunities for individual, supported, group and whole class learning and take into consideration the varying needs and levels of development of the children. The learning environment is designed to support mathematics in every context, from role play to outdoor play.

Mathematics in EYFS is made up of the following aspects:

- **Number** - At the expected level children will have a deep understanding of the numbers to 10, including the composition of each number to 10. Subitise (recognise quantities without counting) up to 5. Automatically recall (without reference to rhymes, counting or other aids) number bonds to 5 (including subtraction facts) and some number facts to 10, including double facts.

- **Numerical Patterns** - At the expected level children will count verbally 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.

Teaching in KS1 and KS2

Mathematics in Key Stage 1 and 2 is taught following the White Rose progression map. We ensure fluency by supplementing this with Target Maths, as well as other reputable published resources in line with the Small Steps in White Rose. Teachers use the National Curriculum Programme of Study to ensure thorough curriculum coverage. We ensure key facts are being taught by making these a half termly focus for each year group. We teach discrete problem solving of all four types of problem, where children are taught to apply specific strategies to tackle each. Children are taught to apply specific facts and methods to solve problems.

The teaching of mathematics at Moorfield Primary School is guided by the three core objectives of the National Curriculum and provides opportunities for individual, supported, paired and group learning, allowing children to engage in the three core areas:

Fluency

- using concrete apparatus to support enactive learning for new concepts (concrete stage)
- learning to recall additive and multiplicative number facts and key skills
- developing flexibility with number facts to promote greater application
- playing games to develop both mathematical knowledge and understanding
- making connections between different mathematical concepts
- interpreting and using symbols, images, diagrams and models as tools to support thinking, problem solving, reasoning and communication from the iconic to the symbolic (pictorial stage)
- learning efficient written calculation methods

Reasoning

- pattern spotting with shape and number
- conjecturing relationships
- mathematical discussion, explanation and reasoning
- investigational work
- following a line of enquiry
- developing an argument
- using increasingly precise mathematical language
- assessing their own learning and suggesting what their next step should be

Problem solving

- applying their mathematics to the four types of problem; logic, patterns and rules, finding all possibilities and word problems.
- refinement of problem solving skills e.g. breaking into simpler steps, finding all possibilities
- developing resilience
- using ICT to model, present and solve mathematical problems and investigations
- the development of personal qualities and positive attitudes to mathematics

Planning and Organisation

All staff follow the small steps planning from White Rose. This is used alongside appropriate fluency tasks found in the Target Maths materials, as well as other reputable published resources in line with the Small Steps in White Rose. Teachers ensure the facts, methods and strategies are being taught in small steps. The White Rose progression map, enables teachers to build pupils knowledge steadily over time, ultimately enabling children to become efficient mathematicians with the ability to solve problems and apply their knowledge of facts and efficient methods. We want children to overlearn a concept, ensuring support and scaffolds are withdrawn in a timely manner.

Daily fluency grids allow children to practice and rehearse knowledge previously taught. Embedding the fluency and recall of facts and methods.

Our key facts document breaks down the key facts we want children to remember and be proficient in by the end of each half term and across the year. These are a focus for each half term and will often appear within daily fluency grids or as part of homework tasks.

Children in EYFS and KS1 follow the Number Sense program as part of daily maths lessons. This will ensure a deep understanding of number and number relationships and develop fluency in addition, subtraction, multiplication and division.

Each year group teaches problem solving through the use of White Rose problems. This ensures that the four problem types; logic, patterns and rules, worded problems or finding all possibilities are taught across the year. Children are taught not to guess and work via trial and error, but instead are taught specific strategies for each problem type. This enables children to apply the facts and methods they have been previously taught and work strategically to solve a given problem.

Intervention and Support

TAs support teachers with the delivery of lessons by encouraging all children to participate as fully as possible. They enable the children to maintain their focus throughout the lesson, through questioning, recapping and re-invigorating their enthusiasm for learning tasks when necessary. They encourage thinking and independent learning as far as possible, using a range of models, images and apparatus. Prior to the lesson, teachers discuss with TA's the intended learning outcome and their role within the lesson, they outline key concepts and potential misconceptions. TA's provide feedback to the teacher verbally and through annotation of children's work.

Strategies that TAs commonly use in class to support children are:

- ensuring that identified children understand the learning objectives for each lesson
- supporting identified children to engage with whole-class teaching and learning sessions
- being a Learning Partner, enabling discussion of the problem/task and develop reasoning. In doing so, encourage children to talk through using the language of mathematics
- working with small groups reinforcing the approach, methods and language used by the teacher
- delivery of Wave 2 intervention programmes/Same Day Intervention in class, enabling children to make accelerated progress and catch up with their peers e.g. Visual Images, Models & Symbols;
- utilising a range of apparatus to support enactive learning e.g. Numicon, Cuisenaire (Number rods), Base 10, bead strings, empty numberlines, 100-squares, multiplication squares, place value sliders, mini-whiteboards
- encouraging children's "Can do" attitude, building their confidence as mathematicians
- emphasising the use of the success criteria when providing learning feedback to children
- enabling children to assess their own understanding and competence against the success criteria and to consider what their next step should be.

Environment for Learning and Ethos

- We promote a quiet, calm learning environment for maths.
- Flexible Learning wall regularly updated which encourages continuous provision
- Resources easily accessible
- Questioning culture and reasoning

Assessment

Assessment is regarded as an integral part of teaching and learning and is a continuous process. It is the responsibility of the class teacher to assess all children in their class. In our school we are continually assessing our pupils, adapting our teaching to fit the needs of the children, thus ensuring progress. Our Success Criteria allow for daily formative assessment opportunities.

Both self evaluation and teacher assessment are combined to measure progress against the facts, methods and strategies being taught.

As well as using short Rising Stars Assessments at the end of each half term which enable us to track the attainment of the children in each individual class, we also use the end of unit assessments in White Rose. Both assessments enable us to identify and support children who need it, predominantly through Booster sessions.

In the EYFS children's progress is tracked through planned observations and one to one assessment. At the end of Reception, this information supports assessment against the EYFS Early Learning Goals. This data is rigorously analysed and supports the identification of areas for development.

Information for mathematical assessment in Key Stage 1 and 2 is a combination of formative ongoing daily assessment, talking to the children and observing and marking their work. This is combined with half termly assessment using Rising Stars and sometimes using a suitable alternative such as past SAT's papers. This provides data for tracking pupils progress which is rigorously analysed by both class teachers, the Head Teacher and the co-ordinator to ensure all pupils and groups of pupils e.g. FSM, SEN, girls/boys, EAL are making good progress. This is discussed each half term and allows for the identification of those children who may need additional support or intervention in the future. Data is shared with children where appropriate to enable them to keep track of their own progress and set challenging goals.

Homework

Homework provides opportunities for children to practice facts or methods taught in class. Year 1 and 2 set homework using the White Rose Homework books which supports the teaching taking place in class. From Year 3 onwards, homework is set once each week, using Century, the online learning platform. This program allows teachers to set appropriate tasks, often linked to concepts recently taught.