

Maths

'A high-quality mathematics education 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.' Department of Education, National Curriculum

Intent

In line with the National Curriculum objectives for mathematics, our intent is that all pupils:

- become fluent in the fundamentals of mathematics.
- are able to reason mathematically.
- can solve problems by applying their mathematics.

At Two Moors, these skills are embedded within maths lessons and developed consistently over time. We want children to enjoy maths and understand why it is vitally important to everyone no matter what their future might hold. In order to achieve this, we realise how important it is for pupils to become fluent in the fundamentals of number so they can reason and solve problems selecting increasingly efficient methods. We want children to be brave in maths, learn from their mistakes and be confident to use maths in everyday situations so they become numerate members of their community regardless of their background or Special Educational Need.

Implementation

To ensure consistency and progression, the school uses the nationally recognised White Rose Maths scheme, with freckle Maths and TTRS used to extend fluency, reasoning and problem solving. The White Rose curriculum is a cumulative curriculum, so that once a topic is covered, it is met many times again in other contexts. For example, place value is revisited in addition and subtraction and multiplication and division. The curriculum is designed to have emphasis on number, with a large proportion of time spent reinforcing number to build competency.

Mathematical topics are taught in blocks, to enable the achievement of 'mastery' over time. These teaching blocks are broken down into smaller steps, to help children understand concepts better. This approach means that children do not cover too many concepts at once which can lead to cognitive overload. Each lesson phase provides the means for children to achieve greater depth, with children who are quick to grasp new content, being offered rich and sophisticated problems, within the lesson as appropriate.

Throughout our Early Years curriculum, we have a strong focus on a language-rich environment and understanding our children's own experiences. Mathematics involves providing children with opportunities to develop and improve their skills in counting, understanding and using numbers, calculating simple addition and subtraction problems; and to describe shapes, spaces and measure. Children learn through games and tasks using concrete manipulatives, pictorial structures and representations which are rehearsed and applied within their own learning during exploration and in adult directed activities. Adults ensure that new vocabulary is introduced, modelled and children are supported to use it in context. Key knowledge and skills are revisited regularly allowing repetition and to embed learning.

A typical maths lesson will provide the opportunity for all children, regardless of their ability or age, to work through fluency, reasoning and problem-solving activities. When introduced to a new concept, children have the opportunity to use concrete objects and manipulatives to help

them understand what they are doing. Alongside this, children are encouraged to use pictorial representations. These representations can then be used to help reason and solve problems. Both concrete and pictorial representations support children's understanding of abstract methods. Teachers reinforce an expectation that all children are capable of achieving high standards in mathematics and the large majority of children progress through the curriculum content at the same pace. Significant time is spent developing deep knowledge of the key ideas that are needed to underpin future learning. This ensures that all can master concepts before moving to the next part of the curriculum sequence, allowing no pupil to be left behind. If a pupil fails to grasp a concept or procedure, this is identified quickly and early (same day) intervention ensures the pupil is ready to move forward in the next lesson. Precise questioning by teachers tests conceptual and procedural knowledge to assess children and identify those requiring intervention. Children with additional needs are included in whole class lessons and teachers provide scaffolding and relevant support as necessary. For those children who are working outside the year group curriculum, individual learning activities are provided to ensure their progress. The structure and connections within the mathematics are emphasised, so that pupils develop deep learning that can be sustained.

In a typical lesson, the children sit facing the teacher and the teacher leads back and forth interaction, including questioning, explanation, demonstration and discussion. Practice and consolidation play a central role; careful variation within this builds fluency and understanding of underlying mathematical concepts. Children's explanation and their proficiency in articulating mathematical reasoning, using precise mathematical vocabulary, are supported through the use of stem sentences given by the teacher. Key facts (multiplication tables and number bonds to 10) are learnt to automaticity to enable pupils to focus on new concepts.

Feedback is given on children's learning in line with our feedback policy. Formative assessment within every lesson helps teachers to identify the children who need more support to achieve the intended outcome and who are ready for greater stretch and challenge through planned questioning or additional activities.

In order to support teacher judgments, children are assessed using end of block tasks for each topic, STAR maths each term and SATS tests (year 6). Gap analysis of any tests that the children complete is undertaken and fed into future planning. These tests are also used to help report to parents in the end of year report. The maths leaders have a clear role to support the staff and the progress of all children in maths throughout the school. Key data is analysed in order to feedback, to inform on progress and future actions. Opportunities to apply maths throughout the curriculum are used and we celebrate World Maths Day with a whole school maths theme day.

Impact

The teachers support the children in developing their collaborative and independent skills, as well as empathy and the need to recognise the achievement of others. Regular and ongoing assessment informs teaching, as well as intervention, to support and enable the success of each child. These factors ensure that we are able to maintain high standards, with achievement at the end of KS2 in line with the national average, as well as a good proportion of children demonstrating greater depth, at the end of each phase.

A mathematical concept or skill has been *mastered* when a child can show it in multiple ways, using the mathematical language to explain their ideas, and can independently apply the concept to new problems in unfamiliar situations.

We monitor the impact of our mathematics teaching through pupil voice, evidence of knowledge and skills as well as outcomes.

- Through discussion and feedback, children talk enthusiastically about their maths lessons and speak about how they love learning about maths.
- Children can articulate the context in which maths is being taught and relate this to real life purposes.
- Children demonstrate a quick recall of facts and procedures. This includes the recollection of the multiplication tables.
- Children show confidence and believe they can learn about a new maths area and apply the knowledge and skills they already have.
- The flexibility and fluidity to move between different contexts and representations of maths.
- Children are able to recognise relationships and make connections in maths lessons.
- Mathematical concepts or skills are mastered when a child can show it in multiple ways, using the mathematical language to explain their ideas, and can independently apply the concept to new problems in unfamiliar situations.
- Children show a high level of pride in the presentation and understanding of the work
- All children to have made progress from their starting points. All children are moving towards achieving Age Related Expectations (ARE) for their year group. Some children will have progressed further and achieved greater depth (GD). Children who have gaps in their knowledge receive appropriate support and intervention.
- All children secure long-term, deep and adaptable understanding of maths which they can apply in different contexts.