



Midsomer Norton Primary School

Mathematics Intent, Implementation and Impact

At Midsomer Norton Primary School we follow the National Curriculum for mathematics. The National Curriculum aims to ensure that children:

1. become **fluent** in the fundamentals of mathematics, including through varied and frequent practice with increasingly complex problems over time, so that pupils develop conceptual understanding and the ability to recall and apply knowledge rapidly and accurately
2. **reason** mathematically by following a line of enquiry, conjecturing relationships and generalisations, and developing an argument, justification or proof using mathematical language
3. 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

Mathematics is an interconnected subject in which pupils need to be able to move fluently between representations of mathematical ideas. The programmes of study are, by necessity, organised into apparently distinct domains, but **pupils should make rich connections across mathematical ideas** to develop fluency, mathematical reasoning and competence in solving increasingly sophisticated problems. They should also **apply their mathematical knowledge to science and other subjects**.

The expectation is that the majority of pupils will move through the programmes of study at broadly the same pace. However, decisions about when to progress should always be based on the security of pupils' understanding and their readiness to progress to the next stage. **Pupils who grasp concepts rapidly should be challenged through being offered rich and sophisticated problems before any acceleration through new content. Those who are not sufficiently fluent with earlier material should consolidate their understanding, including through additional practice, before moving on.**

Our school curriculum drivers also shape our maths curriculum:

Culture: Through our emphasis on developing the language on mathematics

Community: Through an emphasis on collaboration, paired work and talk

Equality - through ensuring there are no barriers to a child's ambition, regardless of their individual circumstances

Intent:

We will provide a maths curriculum which caters for the needs of all pupils that is both challenging and enjoyable, following the mastery approach.

Our mastery approach to the curriculum is designed to progressively develop children's knowledge and understanding of mathematical concepts from the Early Years through to the end of Y6.

We incorporate sustained levels of challenge through varied and high-quality activities with a focus on fluency, reasoning and problem-solving. We provide a wide range of mathematical resources and teach pupils to show their workings in a concrete fashion before establishing ways of pictorially and formally representing their understanding.

We provide our children with a variety of mathematical opportunities, which will enable them to make the connections needed to enjoy greater depth in learning;

There is a strong emphasis on children articulating their understanding. Children explore maths in depth using mathematical vocabulary (Buzz words) to reason and explain their thinking/workings. We teach pupils to explain their choice of methods and develop their mathematical reasoning skills;

We use frequent recap and recall strategies (Daily MOT fluency sessions, Daily Practice, quadrant quizzes etc) to ensure that knowledge sticks.

At each stage of learning, pupils should be able to demonstrate a deep, conceptual understanding of the given topic and be able to build on this over time.

There are 3 levels of learning (BAD):

Basic learning: surface, temporary, often lost

Advancing learning: it sticks, can be recalled and used

Deep learning: can be transferred and applied in different contexts

The deep and advanced levels are what we are aiming for by teaching maths using the Mastery approach.

Recovery Curriculum:

During the recovery period, we intend to maintain the breadth of the school curriculum. The need to prioritise supporting children's mental health, assessment and closing gaps necessitates a focus on key knowledge. In maths teachers will focus on the DFE Mathematics Guidance: Ready-to-Progress Criteria as a starting point to ensure gaps are closed.

School Closure/ Remote Learning:

In the event of a further partial or full closure, teachers will continue to teach the national curriculum remotely including through the use of live sessions within the constraints of our current technology. Priority will be given to daily maths and English lessons.

Mathematical Implementation:

At Midsomer Norton Primary we use a variety of teaching and learning styles in mathematics lessons. Children are taught in mixed age and mixed ability classes. The organisation of groups within a class is flexible. Teachers use continuous 'Assessment for learning' (AfL) to arrange groups within the teaching week.

Differentiation is achieved by teaching and guiding children to self-select activities appropriate to their needs and next steps in learning and through individual support and intervention. The questioning and scaffolding individual pupils receive in class as they work through problems will differ.

Children work on the objective at whatever entrance stage they are assessed as being at. Children can ACQUIRE the skill, APPLY the skill or DEEPEN the skill within the lesson.

Children are taught to judge when they are ready to move to the next stage of learning, which avoids a glass ceiling being placed over their progress.

Children who have shown their understanding at a deep level within the unit, will have opportunities to apply these skills in a GREATER DEPTH activity. These are challenging and ensure that children are using more than just one skill to be able to answer the mathematical problems.

Children with additional needs are included in whole class lessons and teachers provide scaffolding and relevant support as necessary including pre-teaching and over-teaching. For those children who are working outside of the year group curriculum, individual learning activities are provided to ensure their progress.

Practice and consolidation, through a concrete, pictorial and abstract (CPA) approach, play a central role to mathematics learning. Carefully designed variation within this builds fluency and understanding of underlying mathematical concepts.

Concrete – children have the opportunity to use concrete objects and manipulatives to help them understand and explain what they are doing.

Pictorial – children then build on this concrete approach by using pictorial representations, which can then be used to reason and solve problems.

Abstract – with the foundations firmly laid, children can move to an abstract approach using numbers and key concepts with confidence.

All lessons begin with either a short low-stakes assessment to support retrieval practice and develop long-term memory (Daily Practice) and /or recall of mental mathematical facts (Chanting times tables or counting).

Teachers use precise questioning in class to test conceptual and procedural knowledge and assess pupils regularly to identify those requiring intervention so that all pupils keep up. Teachers ensure that concepts are modelled to pupils using multiple representations. This ensures that procedural and conceptual understanding are developed simultaneously.

Reasoning and problem solving are integral to the activities children are given to develop their mathematical thinking.

Mathematics in the Early Years

Mathematics within the Early Years Foundation Stage (EYFS) is developed through purposeful, play based experiences and will be represented throughout the indoor and outdoor provision. The learning will be based on pupils' interests and current themes and will focus on the expectations from Development Matters/Early Years outcomes. As the pupils' progress, more focus is placed on representing their mathematical knowledge through more formal experiences. Pupils will be encouraged to record their mathematical thinking in their Learning Diaries when ready and this will increase throughout the year. (See EYFS policy)

In Reception there is a daily maths whole class input followed by small group work with an adult/ appropriate mathematical activities during continuous provision.

Key Stage 1&2

In key Stage 1 and 2, maths is taught daily.

A typical daily mathematics lesson from year 1 to 6 is structured as follows:

- Fluency Practice in the form of Daily Practice and or times table recall (approximately 10 minutes)
- Collaborative oral work (Talk Tasks) – these are recorded in books more regularly as the children progress through the school (approximately 10 minutes)
- The main teaching activity (approximately 30-40 minutes)
This will include both teaching input and pupil activities and a balance between whole class, grouped, paired and individual work. Children are expected to move onto application tasks once they are sufficiently fluent.
- Regular mini plenaries: These provide an opportunity for assessment, both self and teacher, through well- structured AFL questions and an opportunity to explore misconceptions.
- In addition to the daily maths session, there will also be a short (15-20) MOT fluency activity. This is either following a maths lesson or at a different point in the day. The purpose of this session is to improve children's mental fluency.

Planning:

We aim to plan on a basis of the educational needs to the pupils. Curriculum planning will be informed by an assessment of pupils' starting points and addressing the gaps in their knowledge and skills through regular formative assessment.

The school uses the National Curriculum Framework 2014 and the DFE Mathematics Guidance: Ready-to-Progress Criteria to plan long term, medium term and weekly lesson plans. Starting from the appropriate national curriculum objectives and the ready-to-progress criteria, teachers use White Rose Maths Hub materials, NCETM and NRICH sites and Glow (EYFS) resources to plan lessons tailored to meet the needs of their own classes.

The calculation policy is used within school to ensure a consistent approach to teaching the four operations over time.

At the start of each new topic, key vocabulary is introduced and revisited regularly to develop language acquisition, embedding as the topic progresses.

Teaching 'Quality first teaching' linked to teaching standards:

All teachers:

1. *'Know where their children are'* through the use of concise summative assessment, prior learning, assessment, maths talk
2. *'Understand where their children need to be'* through a secure understanding of year group expectations and/or pre key stage expectations and incisive, ongoing, formative assessment
3. *'Know how they are going to get them there'* through the use of a range of strategies to promote independence, mastery and high expectations of ALL.
4. Effectively deploy adults, specifically during introductions, plenaries & catch-up sessions
5. Plan for progression during and between lessons.

Learning 'Quality first learning':

We work as a team to ensure all of our children:

1. are school ready
2. feel safe & secure
3. are supported by effective classroom routines
4. are engaged in an engaging environment
5. have a clear understanding of the high expectations set for them
6. have high expectations of themselves
7. are confident in their mathematical learning
8. feel ready and excited to be challenged
9. are independent learners
10. are effective critical friends

Assessment:

1. Summative/reported - NFER (MAT agreed) Standardisation (YR – Y6) and SATS papers for Year 2 and 6
2. Summative/ diagnostic – White Rose, Test Base, NCETM
3. Formative / ongoing – * See Marking, Assessment & Feedback policy

Impact:

Our pupils understand the relevance of what they are learning in relation to real life concepts.

The children have positive attitudes unafraid to take risk. They develop a growth mindset, independence, confidence and resilience.

Our pupils are developing skills in being articulate and are able to verbally, pictorially and in written form reason well.

Pupils have quick recall of facts and procedures including Times Table Facts. In Year 4 the average score on the times table assessment is 21/25.

Our pupils are equipped with the flexibility and fluidity to move between different contexts and representations of mathematics. Pupils have the ability to recognise relationships and make connections in mathematics;

Our school standards are high, and children are achieving well. Over the past three years the percentage of children reaching age related expectations is consistently in line with or above the national averages with progress above the national average. The percentage of children reaching age related expectations has risen over the past three years to above the national average.