



THE WHITE ROSE FEDERATION

MATHEMATICS POLICY

Document Status			
Date of adoption by the Governing Body		Date of next review	
Autumn 2021		Autumn 2023	
Responsible officer			
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Links to Other Policies	
Teaching & Learning Policy	Visual Calculation Policy
SEND Policy	Marking Policy

Introduction

'Mathematics is a creative and highly interconnected 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 mathematical education therefore provides a foundation for understanding the world, the ability to reason mathematically, an appreciation of the power and beauty of mathematics, and a sense of enjoyment and curiosity about the subject.' (DfE 2013)

As can be seen from the above introduction, mathematics pervades all aspects of our lives and helps us to make sense of our world.

This policy should be read in conjunction with the following school policies:

- Visual calculation policy
- Marking policy
- SEN policy

EYFS

Mathematics within the 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. Mathematical understanding can be developed through stories, songs, games, imaginative play, child-initiated learning and structured teaching.

KS1 Maths

The principal focus of mathematics teaching in Key Stage 1 is to ensure pupils develop confidence and mental fluency. If the subject is represented using concrete materials, pictorial representations and abstract symbols, it will allow children to visualise maths in varied ways, see connections and to independently explore and investigate a topic. Practical activities and resources offer the children a deeper mathematical understanding of more complex concepts. Providing children with visual representations also offers a scaffold when developing a more robust understanding of maths.

Throughout Key Stage 1, it is important that children gain a secure knowledge of number and place value and become confident when using the four operations in both formal methods as well as problem solving where often the approach is not immediately evident.

Alongside number work, pupils begin to identify fractions using shapes, objects and quantities and make connections to equal sharing and grouping. Pupils are taught to count to ten in fractions, recognise equivalent fractions and develop their understanding of fractions on a number line.

At this stage, pupils will also develop their ability to recognise, describe, draw, compare and sort different shapes. Pupils have the opportunity to use a range of measures to describe and compare different quantities such as length, mass, capacity/volume, time and money and are expected to use related vocabulary for all topics. Other subjects may have strong links to some maths topics allowing cross-curricular teaching. For example, shape through art or computing, measures through science or

coordinates in geography. This is to ensure we continually maximise learning opportunities for all pupils across an entire curriculum.

KS2 maths

Lower Key Stage 2 – Years 3 - 4. The principal focus of mathematics teaching in lower Key Stage 2 is to ensure that pupils become increasingly fluent with whole numbers and the four operations, including number facts and the concept of place value. This should ensure that pupils develop efficient written and mental methods and perform calculations accurately with increasingly large whole numbers. At this stage, pupils should develop their ability to solve a range of problems, including with simple fractions and decimal place value.

Teaching should also ensure that pupils draw with increasing accuracy and develop mathematical reasoning so they can analyse shapes and their properties, and confidently describe the relationships between them. It should ensure that they can use measuring instruments with accuracy and make connections between measure and number. By the end of Year 4, pupils should have memorised their multiplication tables up to and including the 12 multiplication table and show precision and fluency in their work.

Upper Key Stage 2 – Years 5 - 6 The principal focus of mathematics teaching in upper Key Stage 2 is to ensure that pupils extend their understanding of the number system and place value to include larger integers. This should develop the connections that pupils make between multiplication and division with fractions, decimals, percentages and ratio. At this stage, pupils should develop their ability to solve a wider range of problems, including increasingly complex properties of numbers and arithmetic, and problems demanding efficient written and mental methods of calculation.

With this foundation in arithmetic, pupils are introduced to the language of algebra as a means for solving a variety of problems. Teaching in geometry and measures should consolidate and extend knowledge developed in number. Teaching should also ensure that pupils classify shapes with increasingly complex geometric properties and that they learn the vocabulary they need to describe them. By the end of Year 6, pupils should be fluent in written methods for all four operations, including long multiplication and division, and in working with fractions, decimals and percentages.

Alongside the above objectives runs a desire to implement key reasoning and problem-solving skills within lessons and also throughout the wider life of school. We aim to develop children's resilience, focus and problem skills by providing them with relevant challenge via various mathematical representations including open-ended problems and real word application.

Parental Involvement

Parental involvement at school, we encourage parents to be involved by:

- Inviting them into school twice/three times yearly to discuss the progress of their child, (via telephone or online during COVID restrictions)
- Providing parents with the opportunity to look through books books, information relating to their child's current targets and a yearly report outlining their child's achievements.
- Holding workshops for parents based on the national curriculum and expectations of statutory assessments.
- Sending homework activities weekly to be completed by or with their child (online and written activities)

Inclusion

Our inclusive approach emphasises promoting multiple methods of solving a problem, by building self-confidence and resilience in pupils. Though the whole class goes through the same content, there is still plenty of opportunity for differentiation. Differentiation occurs in the support and intervention provided to different pupils particularly at earlier stages. Lessons are differentiated for the need of the pupils in class and there is questioning and scaffolding for individual pupils in class as they work through problems. This will differ, with higher attaining children, or those pupils who grasp concepts quickly, challenged through more demanding problems to deepen their knowledge of the same content. Those children who are not sufficiently fluent are provided with additional support to consolidate their understanding before moving on.

Pupils' difficulties and misconceptions are identified through immediate formative assessment and addressed with intervention – commonly through individual or small group support, later the same day where possible or in catch-up sessions. Where children make less than expected progress, efforts are made to ensure relevant support is put in place to help support the child. No child will be denied a full curriculum however, and concepts will be revisited throughout the year during intervention times to help with long term understanding.

Organisation

- All children receive a daily maths lesson although mathematical skills run through many other areas of the curriculum.
- Each lesson focuses on one clear learning objective which all children are expected to achieve; extension activities enable those children who grasp the objective rapidly to extend their learning by exploring it at greater depth.
- Each lesson can include elements of: fluency, to practise skills; reasoning, to deepen understanding; and problem solving, to apply skills depending on the objective being taught and the understanding of the children.
- Teachers use the White Rose planning and resources (such as NCTEM and NRich) to aid maths teaching within school to ensure full curriculum coverage including fluency, reasoning and problem solving opportunities are addressed within lessons. Children also have access to Times Tables Rock Stars (TTRS) and Numbots to aid learning online.
- Every classroom has a range of practical apparatus to support children's learning, with additional resources stored centrally. We aim to review this and add to it each year. This year, we are using knowledge organisers to support independent learning within lessons.
- We conduct our own summative assessments through the Rising Star PUMA assessments which are completed at the end of each term and reviewed as a class team.
- In Year 2 and Year 6, our staff prepare children for the statutory assessments (SATs) through examples and practise questions. SATs information evenings will be held during the year so that our families are aware of the expectations of the assessments.
- In Year 4, there is a statutory multiplication check. Children will have access to the online resources to support their awareness of the check and an information evening will be held so our families are aware of the expectation of the assessment.
- Beginning and end of year block assessments are used to monitor the progress of children within the topic they are working on. This allows staff to target areas of support and identify where to challenge.
- As a federation, we have end of year expectations for maths for each year group. Each child should be achieving these objectives by the end of the year, unless they have individual provision.

Policies

- In school, we have a visual calculation policy (VCP) that shows all the different methods that we use across the federation and this ties in with White Rose Maths.
- Our VCP also has all the suggestions for concrete and pictorial resources to support learning.
- This is available to all our families on request.

Monitoring and Review.

The monitoring of maths teaching and pupil progress is the shared responsibility of teachers, the subject leader and the senior leadership team. The work of the subject leader includes supporting colleagues in the teaching of maths, keeping up to date with current developments as well as providing a strategic lead and direction for the subject.

The school's governing body receive regular updates to inform them of the vision for continually driving forward. Within school, we regularly have professional discussion where we look at maths with a critical eye within the school. We observe lessons, speak to children/staff, analyse books/marking and ultimately come together as a staff to critique what we are doing well and what we want to improve.