

## Woodford Valley Primary Academy Maths Policy

This school is committed to creating the ethos in which children can grow towards Christian life, love and learning

*And now I give you a new commandment: love one another. As I have loved you, so you must love one another. If you have love for one another, then everyone will know that you are my disciples.”*

*John 13: 34-35*

<b>Mathematics Policy 2022-24</b>	Kate Arrandale	<b>Date:</b> November 2024
<b>Approved by:</b>		
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### Introduction

This document is a statement of the aims, principles and strategies for the teaching and learning of Mathematics at Woodford Valley Primary Academy. Mathematics is a core subject and this policy has been written in accordance with its statutory requirements.

All pupils can achieve in mathematics! At Woodford Valley Primary Academy, it is our belief that pupils are not learning to be mathematicians but that they **are** mathematicians.

‘Mathematics is a creative and highly inter-connected discipline...a high-quality mathematics education should provide 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.’ (National Curriculum for Mathematics, 2014)

### Intent

We aim to equip pupils with the tools to understand Maths. These tools include reasoning, problem solving and the ability to think in abstract ways. Mathematics is integral to all aspects of life; with this in mind, we strive to ensure that our children develop a healthy and enthusiastic attitude towards mathematics that will stay with them and support them in the next stage of their education and beyond. At each stage of learning, children are actively supported to reach their full potential as mathematicians.

The National Curriculum for mathematics aims to ensure that all pupils:

- 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.
- Reason mathematically by following a line of enquiry, conjecturing relationships and generalisations, and developing an argument, justification or proof using mathematical language

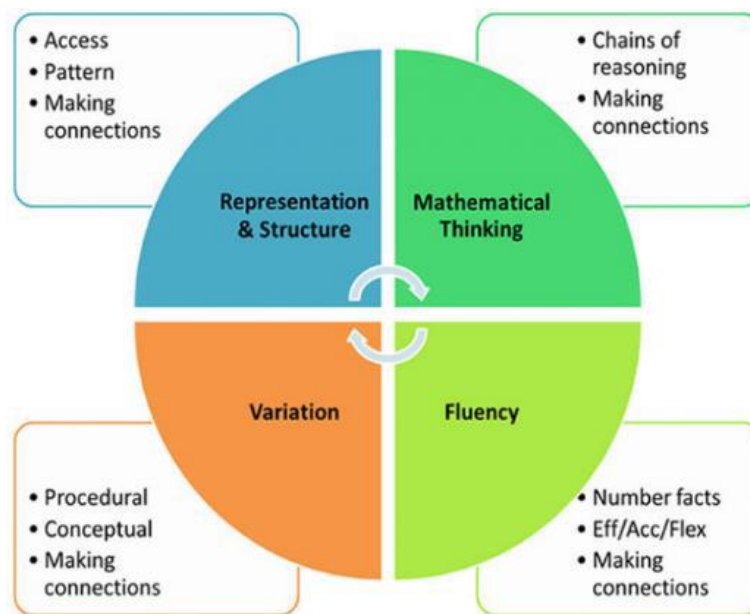
- Can solve problems by applying their mathematics to a variety of routine and non-routine problems with increasing sophistication, including breaking down problems into a series of simpler steps and persevering in seeking solutions.

**Implementation**

All teachers follow a termly overview plan from White Rose Maths and are encouraged to design lessons using a range of resources, including, but not limited to, the White Rose Maths Scheme of Learning from the White Rose Maths Hub. A typical Maths lesson provides the opportunity for **all** children, regardless of their ability, to become confident and capable learners through whole class teaching. We are committed to building on prior learning and enabling our children to demonstrate a deep, conceptual understanding of each topic that they can develop over time. They are encouraged to develop fluency in their recall of key facts and a whole school approach to the teaching of calculation strategies is deployed across the school. This ensures a consistent and progressive approach and prepares our children for the upper key stage 2 curriculum. Reasoning and problem-solving skills are explicitly taught to enable children to become independent learners who are prepared to take risks.

Additional time is allocated to arithmetic to ensure key skills in calculation are retained. The teaching of multiplication facts continues to be a discrete focus, where the applications of these skills are essential for accessing other areas of mathematics. To make the learning relevant, cross-curricular links are made wherever possible and children are encouraged to apply skills from all areas to complete real-life challenges and give learning a sense of purpose.

We follow a mastery approach to our Maths lessons using the 5 Key Ideas of Mastery:



<u>Coherence</u>	<u>Representation &amp; Structure</u>	<u>Mathematical Thinking</u>	<u>Fluency</u>	<u>Variation</u>
Lessons are broken down into small connected steps that gradually unfold the concept, providing access for all children that enables them to apply the concept to a range of contexts.	Representations used in lessons expose the mathematical relationships and structure being taught.	Ideas are worked on by the children: thought about, reasoned and discussed with ‘talk partners’.	We promote quick and efficient recall of facts and procedures and the flexibility to move between different contexts & representations.	We aim to represent the concept being taught in more than one way. We encourage children to pay attention to what is kept the same and what changes.

To provide adequate time for developing key skills in fluency, reasoning and problem solving, each class teacher will provide at least five daily mathematics lessons per week. This may vary in length but will usually last for about 45 to 60 minutes. Additional mathematics may be taught within other subject lessons when appropriate.

Class teachers provide high quality maths lessons ensuring that there is emphasis on direct whole-class teaching, groups/partner work and independent work. We use a range of approaches (concrete, pictorial and abstract methods) following the White Rose scheme of work, teaching mathematical concepts through small steps. Staff are expected to teach and model correct mathematical language, which scaffolds children's reasoning and explanation skills – sentence stems are used to develop this.

### **Maths in Early Years**

**In EYFS (Nursery and Reception) we follow the EYFS framework.** Teachers ensure the children learn through a mixture of adult led activities and child-initiated activities both inside and outside of the classroom. Mathematics is taught through an integrated approach using material from NCETM Mastering Number, White Rose Maths and Numberblocks. The children have a wide range of structured play resources available to them throughout the year - this is known as "continuous provision". The adults model the use of these resources and the appropriate mathematical language as they support the children in their play.

Across Reception and through to KS1, we have implemented a new and exciting Mastering Number maths project. Our overarching aims are for children to:

- Make good progress towards the **Early Learning Goals**
- Be **confident in communicating** their ideas
- Develop a **positive attitude** towards maths and be willing to 'have a go'

### **Maths in Years 1 and 2**

In Years 1 and 2, the focus of Maths is to ensure the children develop confidence and mental fluency with whole numbers, counting and place value. This often involves working with numerals, words and the four operations (+ - x ÷). The children should be precise in using and understanding place value and know number bonds to 20. The children also develop their ability to recognise, describe, draw, compare and sort different shapes. The children will use a range of measures to describe and compare different quantities (such as length, mass, capacity/volume, time and money).

### **Maths in our Lower Key Stage 2 (Years 3 and 4)**

In Years 3 and 4, the focus is to ensure the children become increasingly fluent with whole numbers and the four operations (including number facts and place value). Pupils begin to develop efficient written and mental calculations with increasingly large whole numbers. They begin to develop their ability to solve a range of problems, including simple fractions and decimal place value. The children develop mathematical reasoning to help them analyse shapes and their properties and confidently describe their relationships.

By the end of Year 4, children should have memorised their multiplication tables up to and including the 12 times table and be able to show precision and fluency in their work.

*Pupils in Year 4 are prepared for the Multiplication Tables Check (MTC).*

### **Maths in our Upper Key Stage 2 (Years 5 and 6)**

In Years 5 and 6, the focus of Maths is to ensure that children extend their understanding of the number system and place value to include larger integers. Pupils should be able to make connections between multiplication and division with fractions, decimals, percentages and ratio. Children should develop their ability to solve a wider range of problems, including increasingly complex properties of numbers and arithmetic, and problems that demand the use of efficient written and mental methods of calculation. Children are introduced to algebra as a means for solving a variety of problems.

The children's understanding and knowledge in geometry and measures consolidates and extends the knowledge they have developed in number; children should be able to classify shapes with increasingly complex geometric properties, using the vocabulary they need to describe them with accuracy and confidence.

*Our Y6 pupils are prepared for KS2 SATs.*

## **Presentation Expectations in Maths Books**

We want children to take pride in their learning. Therefore, we follow certain presentation expectations when working in our Maths Books.

### **KS1**

- Date and objective for the lesson are clear.
- When writing on sheets, numbers are written in boxes/ answer squares.
- When writing in books, digits are written in squares where possible.
- There are opportunities provided to practice writing digits.

### **KS2**

- Date is written each day.
- Objective for the lesson each day is evident in book (written/ sticker/ title etc.)
- Margins are drawn neatly using a ruler when completing written work in books
- One square is used for each digit or symbol.
- Worksheets are stuck in neatly and include a date.

## **Impact**

**The impact of our Maths curriculum is that at the end of Key Stage 2 our pupils achieve and make progress in line with other pupils nationally, evident through:**

- Fluency in their recall of key number facts and procedures
- Accuracy in the formal calculation methods for all four operations
- The flexibility and fluidity to move between different contexts and representations of mathematics.
- The ability to recognise relationships and make connections in mathematics
- The confidence and resilience to reason mathematically and solve a range of problems.
- Children can use maths across the curriculum.

## **Special Educational Needs**

Children with additional needs are supported by using practical resources and differentiated activities where needed. They are also further supported by additional support staff whenever possible. Where applicable, children's provision maps will incorporate suitable objectives from the National Curriculum or the EYFS curriculum and teachers keep these objectives in mind when planning work. In addition to quality first teaching, interventions also take place during the afternoons and focus on those children who may need more specific targeted input.

## **Assessment, Recording and Reporting to parents**

Assessment is an integral part of the maths curriculum and not an addition to it. Children's work in mathematics is assessed from three aspects:

- 1)** Informal, formative assessments are made continually by questioning the children, observing and monitoring their work. These short term assessments are closely related to the learning objectives for the lesson and help inform next steps.
- 2)** Periodic assessments take place at the end of a unit/ termly – we use white rose maths end of block assessments to check progress and understanding of content covered. This information also informs interventions.
- 3)** Summative assessment is less frequent - this is the use of tests or more formal assessments to find out what children have learnt. We use SATS papers in Y2 and Y6 and White Rose Assessments for termly assessment.

Statutory Assessment Tests (SATs) are used for children in Year 2 and 6, plus children in Year 4 are also required to take a multiplication tables check (MTC) in the Summer Term. The purpose of the check is to determine whether pupils can fluently recall their times tables up to 12, which is essential for future success in mathematics.

A whole school tracking system is used to closely monitor children's progress throughout the school. Teacher assessments are entered termly and are closely analysed to identify children working at greater depth or who are at risk, appropriate intervention is then put in place to close gaps.

We see the relationship with parents as very important in supporting their children's mathematical skills. At parents evening, you should have received information about your child's end of year outcome targets. Parents also receive an end of year report which provides information on their child's outcomes and progress.

## **Routes through Calculation**

Our routes through calculation have been devised to meet requirements of the National Curriculum 2014 for the teaching and learning of mathematics, and are also designed to give pupils a consistent and smooth progression of learning in calculations across the school. Many of these examples also derive from the White Rose calculations policy and tie in with the White Rose schemes of learning used across the school. Children have access to a wide range of counting tools and apparatus throughout.

It is important that any type of calculation is given a real life context or problem solving approach to help build the children's understanding of the purpose of calculation, and to help them recognise when to use certain operations and methods when faced with problems - this is a priority within our lessons. Children are taught and encouraged to use the following processes in deciding what approach they will take to solve a calculation, to ensure they select the most appropriate method for the numbers involved: "Can I do it in my head using a mental strategy?" "Could I use some jottings to help me?" "Should I use a written method to help me work it out?" Mathematical vocabulary is important with each operation so this is a key part of their learning, for example, we will use the term 'ones' and not 'units'. E.g. Th H T O or 1000s 100s 10s 1s. Vocabulary specific to each method is shown within each route through calculation.

## **Times Tables**

At Woodford Valley Primary Academy, we believe that through a variety of interactive, visual and engaging techniques, all children can achieve the full multiplication tables knowledge by the time they leave Primary School. The new National Curriculum (2014) states that by the end of year 4, pupils should be able to recall multiplication and division facts for multiplication tables up to 12x12. Children in Year 4 are also required to take a multiplication tables check (MTC) in the Summer Term. The purpose of the check is to determine whether pupils can fluently recall their times tables up to 12, which is essential for future success in mathematics. This means it is important for the children to learn their multiplication tables facts and to be able to recall them quickly and accurately.

Information about the MTC check can be found [here](#)

We teach times tables using the following progression:

Year 1 – Be able to count in multiples of twos, fives and tens

Year 2 - Be able to recall 2, 5 and 10 multiplication and division facts

Year 3 - Be able to recall 3, 4 and 8 multiplication and division facts

Year 4 - Be able to recall 6, 7 and 9 multiplication and division facts

Year 5/6 - application of multiplication and division facts to problem solving

To support children's learning of multiplication tables we have a Multiplication Table Challenge and children have access to Times Tables Rockstars. This is an online resource that Years 2-6 use to aid the teaching and fluency of Multiplication and division facts. In Years 3-5 children also take part in mad minute which is individualised to their own journey through the times tables 2-12.

## **Homework**

KS1- Numbots is used to help children learn their number facts at home and in school.

KS2 - We use MyMaths for pupils in KS2 to set weekly homework tasks. Homework tasks are linked to work covered in class that or previous week. We also use CGP homework books to set Maths homework each week.

## **Monitoring**

The Mathematics subject leader (Miss K Arrandale) has the overall responsibility of monitoring the standard of pupils work, the quality of the teaching and evaluating impact. The work of the subject leader involves supporting colleagues in the teaching of mathematics, being aware of current developments in the subject, and providing a strategic lead and direction for the subject in the school so that it remains high profile.

The school leadership team (& subject leader) will observe mathematics lessons and give feedback, staff will be directed to relevant CPD to develop their skills and support and improve their practice. Book looks take place termly to monitor progress and standards and for the purpose of moderation. The school participates in external moderation. This policy has been read in conjunction with other school policies.

A three phased approach will be deployed to the teaching of Maths:

**1) Whole Class Approach**

This will encompass the main maths curriculum upon return. For most pupils this will be sufficient to meet the aims set out in our recovery curriculum, although their journeys will happen over different time frames. Through QFT of activities and lessons planned, teachers will be able to identify those who need more support in their recovery which will lead to a more personalised response.

**2) Personalised response**

Where some pupils struggle to engage in the Maths curriculum, further intervention will be undertaken by school staff to enable their needs to be met. This will be in addition to the daily maths lesson.

**3) Deep Recovery**

This will be for pupils who have experienced a severe impact on their learning and development in Maths, 1:1 or small group specialist tuition will be arranged.

In some year groups, grouping may be used to work with groups using a guided approach. This may be needed to focus teaching on specific needs and gaps in learning. Groupings are flexible and will be reviewed regularly.

**Disability Equality Impact Assessment**

This policy has been written with reference to and in consideration of the school's Disability Equality Scheme. Assessment will include consideration of issues identified by the involvement of disabled children, staff and parents and any information the school holds on disabled children, staff and parents.

***Any questions or concerns regarding this policy should be made to the Mathematics Lead.***