



Inspiring and Nurturing Lifelong Learners

## **ELMGROVE PRIMARY SCHOOL AND NURSERY**

### Mathematics Policy

November 2022

Next review November 2023

#### **Our Intent**

At Elmgrove, we believe that mathematics teaches children how to make sense of the world around them through developing their ability to calculate, reason and solve problems. Mathematics is essential to everyday life, critical to science, technology and engineering, and necessary for financial literacy and most forms of employment. A high-quality, fun mathematics education with logical connections therefore provides a foundation for understanding the world around them.

Children are taught mathematics in small steps and are encouraged to take risks and build resilience, using open-ended problem-solving tasks. Children are encouraged to apply their mathematics knowledge to a variety of concepts to deepen their understanding.

The national curriculum for mathematics aims to ensure that children:

- are fluent in the fundamentals of mathematics, accomplished problem solvers and can confidently apply a range of strategies that show how they breakdown problems, prove arguments and persevere in seeking solutions.
- are able to converse fluently, using mathematical language to demonstrate their reasoning and demonstrate high proficiency in rapidly recalling mathematical facts

We endeavour to teach Mathematics so that children are taught to apply their knowledge and skills to a range of practical, real life contexts, to ensure their learning is both purposeful and meaningful. Skills are linked and taught together to maximise teaching and learning time to give context to learning. From an early age we aim to ensure a high focus on developing varied mathematical fluency and number sense. This is achieved through the NCETM (National Centre for Excellence in the Teaching of Mathematics) Mastering Number programme, taught from reception through to year 2.

#### **Implementation**

Our teaching is based on the recommended National Curriculum to ensure a robust approach. This is then personalised to meet the needs of our learners. 'White Rose Maths' has been used to help sequence the objectives for each individual year group and to ensure pace and progression within skills throughout school. Sitting behind these is the calculation policy which aims to support key subject knowledge, address common misconceptions as well as make links with other mathematical concepts to support an integrated approach.

We assess mathematics attainment at the end of each unit of work and use a point in time judgement to decide if the child is working well below, below, at or above age-related expectation at the end of each half term. To validate teacher assessments, KS2 use also use a termly test to obtain a standardised score. This helps us identify whether pupils are where they should be for that point of the year and if any additional support is required such as additional tuition or intervention.

Our teaching supports children to embed mathematical fluency through mastering the small steps identified as essential to their ability to progress. KS1 use Primary Stars to supplement their mathematics planning to further break lessons into smaller steps. Mathematics is moderated within year groups half termly and across the school on a termly basis. The



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National Association of Head Teachers (NAHT) Key Performance Indicators (KPIs) are used to measure and record progress in the absence of levels of attainment. KPIs outline a summary of the key elements within the programme of study, that, if mastered demonstrate a child's grasp of understanding of that aspect of the National Curriculum. Some KPIs are repeated to ensure that key concepts are mastered over time. Teachers carefully consider whether a child has been taught but not yet grasped the concept or mastered the skill, has been taught and mastered the concept or skill or has been taught the concept or skill and has exceeded expectations. These performance standards highlight what a child can cannot do and are used to inform planning.

### **Early Years Foundation Stage (EYFS)**

In EYFS the children will work with practitioners who guide them through the core principals needed to access the fundamentals of mathematics. These are detailed below:

1. Cardinality and counting – the cardinal value of number is the quantity of things it represents.
2. Comparison – knowing which numbers are worth more or less than each other.
3. Composition – understanding that one number can be composed from two or more smaller numbers.
4. Pattern – looking for and finding patterns. This helps children to notice and understand mathematical relationships.
5. Shape and Space – understanding what happens when shapes move or combine with other shapes. This helps children to develop wider mathematical thinking.
6. Measures – comparing different aspects such as length, weight and volume. This helps when using units of measurement to compare in Key Stage 1.

### **Key Stage One and Key Stage 2 (KS1 and KS2)**

In KS1 and KS2 the children will learn a full and broad curriculum which fosters mastery within the core concepts. These are detailed below:

1. Number and place value
2. Addition and subtraction
3. Multiplication and division
4. Measure
5. Geometry
6. Statistics

We offer all children access to the scaffolding, resources and manipulatives that they need to master core concepts. Visual, concrete and pictorial aids are used to help support children in learning the interrelated dimensions of mathematics and the underpinning relationships within the number system.

We empower our children to be mathematicians who are confident in using and applying mathematical vocabulary, accurately and confidently across a wide range of contexts.

We follow a progressive curriculum with opportunity for skills and key learning to repeat and build over time.

### **Key Stage One (Years 1 and 2)**



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The principal focus of mathematics teaching in key stage 1 is to ensure that pupils develop confidence and mental fluency with whole numbers, counting and place value. This should involve working with numerals, words and the four operations, including with practical resources [for example, concrete objects and measuring tools].

At this stage, pupils should develop their ability to recognise, describe, draw, compare and sort different shapes and use the related vocabulary. Teaching should also involve using a range of measures to describe and compare different quantities such as length, mass, capacity/volume, time and money.

By the end of year 2, pupils should know the number bonds to 20 and be precise in using and understanding place value. An emphasis on practice at this early stage will aid fluency. Pupils should read and spell mathematical vocabulary, at a level consistent with their increasing word reading and spelling knowledge at key stage 1.

### **Lower Key Stage Two (Years 3 and 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.

Pupils should read and spell mathematical vocabulary correctly and confidently, using their growing word reading knowledge and their knowledge of spelling.

### **Upper Key Stage Two (Years 5 and 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.

Pupils should read, spell and pronounce mathematical vocabulary correctly.