



# Mathematics Policy

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# Mathematics Policy

## Section 1: Introduction

Mathematics is essential to everyday life, critical to science, technology and engineering, and necessary in most forms of employment. A high-quality mathematics education therefore provides a foundation for understanding the world, the ability to reason mathematically, and a sense of enjoyment and curiosity about the subject. This revised policy takes into account the new National Curriculum (2014)

### Purpose:

The purpose of this policy is to describe our practice in Mathematics and the principles upon which this is based.

### Aim(s):

We aim to develop lively, enquiring minds encouraging pupils to become self-motivated, confident and capable in order to solve problems that will become an integral part of their future.

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 have conceptual understanding and are able to recall and apply their knowledge rapidly and accurately to problems
- **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.

Children deserve:

- To be set appropriate learning challenges
- To have adults working with them to help them overcome specific barriers they may face.

## School Curriculum - Programme of Study

The curriculum is delivered by class teachers. When necessary, work is differentiated in order to give appropriate levels of challenge. Planning is based upon the new National Curriculum (2014). Class teachers are responsible for the relevant provision of their own classes and individually develop weekly plans which give details of learning objectives and appropriate activities.

## **Foundation Stage**

The programme of study for the Foundation stage is set out in the EYFS Framework. 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 shape, spaces and measures.

## **Key Stage 1 and 2**

The Programmes of study for mathematics are set out year by year for Key Stages 1 and 2 in the new National Curriculum (2014). The programmes of study are organised in a distinct sequence and structured into separate domains. Pupils should make connections across mathematical ideas to develop fluency, mathematical reasoning and competence in solving increasingly sophisticated problems. By the end of each key stage, pupils are expected to know, apply and understand the matters, skills and processes specified in the relevant programme of study.

### **Key Stage 1**

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 (e.g. 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.

### **Key Stage 2**

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.

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 (if ready), and in working with fractions, decimals and percentages. Pupils should read, spell and pronounce mathematical vocabulary correctly.

### **Cross curricular**

Throughout the whole curriculum, opportunities to extend and promote Mathematics should be sought. Nevertheless the prime focus should be on ensuring *mathematical progress* delivered discretely or otherwise.

### **Calculation Policy**

The calculation policy has been reviewed and updated in light of the new National Curriculum 2014.

### **Teaching and Learning**

#### **Long Term Planning**

The National Curriculum for Mathematics 2014, Development Matters and the Early Learning Goals provide the long term planning for mathematics taught in the school.

#### **Medium Term Planning**

Years 1-6 use the White Rose Maths Hub schemes of learning as their medium term planning documents. These schemes provide teachers with exemplification for maths objectives and are broken down into fluency, reasoning and problem solving, key aims of the National Curriculum. They support a mastery approach to teaching and learning and have number at their heart. They ensure teachers stay in the required key stage and support the ideal of depth before breadth. They support pupils working together and provide plenty of time to build reasoning and problem solving elements into the curriculum.

#### **Short Term Planning**

The above schemes of learning support daily lesson planning. Within most maths lessons teachers provide 'mild, spicy, hot and flaming hot' learning opportunities (flaming hot being

the most challenging). The idea is that the children are able to select the activity they feel will challenge them and thus create a growth mindset. If the children achieve their learning intention (be that mild, spicy, hot), they will then progress to the next step. Next steps are given within lessons to ensure children are challenged and reach their full potentials. The Teaching for Mastery Documents (2015) are used for reasoning and problem solving opportunities. Most lessons will provide reasoning and problem solving opportunities for all children, regardless of their ability. With 1 discrete reasoning or problem solving lesson once every 2 weeks.

Lessons are planned using a common planning format and are monitored at intervals by the mathematics subject leader. EYFS planning is based on the medium term plans and delivered as appropriate to individual children with thought to where the children are now and what steps they need to take next. All classes have a daily mathematics lesson where possible. Teachers of the EYFS ensure the children learn through a mixture of adult led activities and child initiated activities both inside and outside of the classroom.

### **Assessment**

- Mental maths tests once every 2 weeks (Rising Stars)
- Arithmetic and reasoning papers 1 x end of Autumn, Spring and Summer terms.
- Unit tests after each WRH topic e.g. place value.

### **Inclusion and equal opportunities**

All children are provided with equal access to the mathematics curriculum. We aim to provide suitable learning opportunities regardless of gender, ethnicity or home background.

### **Resources**

Resources are stored centrally and accessed by teachers at the beginning of a topic. Concrete objects (e.g. numicon, dienes) are readily available for all children in key stage 1 (and where appropriate) to access within any lesson.

### **Displays**

All classrooms must have a working wall clearly linked to the topic being taught with progression evident throughout the week/ topic.

### **Calculation Policy**

The calculation policy has also been reviewed in light of the new National Curriculum 2014.

### **Marking and presentation**

Teachers are expected to adhere to the schools marking policy when marking books and presentation policy when guiding children as to how to present their work.

### **Homework**

Children from Years 1 to 6 will complete online my maths challenges set by the class teacher. In preparation for SAT's, past papers will occasionally be set as homework in Year 6.

### **Monitoring and Evaluation**

The Curriculum leaders, alongside SLT, are responsible for monitoring and evaluating curriculum progress. This is done through book scrutiny, planning scrutiny, lesson observations, pupil interviews, staff discussions and audit of resources.

### **Review**

The mathematics policy will be reflected in our practise. The policy will be reviewed every two years or sooner if needed.

## **Teaching and Learning**

The approach to the teaching of mathematics within the school is based on:-

- **A mathematics lesson every day**
- **A clear focus on direct, instructional teaching and interactive oral work with both the whole class and smaller ability groups.**



