



This policy should be taken as part of the overall strategy of the school and implemented within the context of our vision, aims and values as a Church of England School.

## Mathematics Policy

Revised September 2014

### Rationale

Mathematics is a creative and highly inter-connected 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 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. (Department for education National Curriculum 2013)

### Aims:

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:

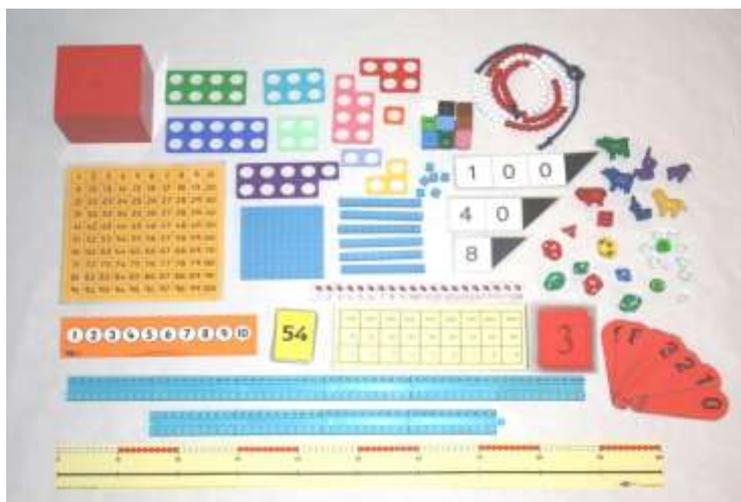
- become **fluent** in the fundamentals of mathematics, including through varied and frequent practice with increasingly complex problems over time, so that pupils have conceptual understanding and are able to recall and apply their knowledge rapidly and accurately to problems
- **reason mathematically** 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 be taught well and be given the opportunity to learn in ways that maximise the chances of success.
- To have adults working with them to tackle the specific barriers to progress they face.

### Teaching Approaches and Strategies:

We use a rich variety of models and images to support children to develop a deep conceptual understanding of mathematics. This image illustrates some of the resources we use to support understanding.



Our approach to teaching mathematics is based on:

- developing pupils' understanding of number and place value
- developing pupils' conceptual understanding of calculation.
- models, images and resources being used throughout the learning journey.
- pupils being encouraged to develop independence and to select and use resources to support their learning.
- practical activities being a regular feature of mathematics lessons.
- differentiation to meet the needs of pupils.
- solving problems being integral to the maths curriculum.
- taking risks, making mistakes, and learning from these experiences.
- exploring misconceptions in order to deepen understanding.

## **School Curriculum - Programmes of Study**

### **Foundation Stage**

The programme of study for the Foundation stage are set out in the Development Matters in the Early Years Foundation Stage (EYFS). 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.

### **Lower 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.

## **Upper Key Stage 2**

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.

## **Written Calculation Policy**

The written calculation policy (see appendix 1) has been reviewed in light of the new National Curriculum.

## **Assessment**

We believe assessment is at the heart of the learning journey. Our formative systems actively promote, monitor and record pupils' progress. Assessment is used as a teaching tool as well as a means for judging attainment. Teachers review pupils' progress closely as part of daily classroom practice, involving pupils in the assessment of their strengths and weaknesses and provide feedback on how to improve.

Throughout the year pupils will engage in a variety of tasks and tests which will be used to support teachers' assessment of pupils' progress and attainment. At the end of KS1 and KS2 pupils will be involved in statutory assessments (SATs) to provide national benchmarks for attainment and progress. More detail on statutory assessments is provided during class meetings in Year 2 and Year 6.

## **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.

## **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 and staff discussions.

Signed: Chair of Curriculum and Standards Committee. ....Suzy Barnes.....

Approved date: September 2014

Review date: September 2015