



## Mathematics Policy

Mathematics is a tool for everyday life. It is a whole network of concepts and relationships which provide a way of viewing and making sense of the world. It is used to analyse and communicate information and ideas and to tackle a range of practical tasks and real life problems. 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.

### 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.

### School Curriculum - Programme of Study

#### 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 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.

### **Teaching and Learning**

At St Wilfrid's, there is a dedicated mathematics lesson in KS1 and KS2 daily, lasting approximately 60 minutes. We use Power Maths to support our teaching of maths from Reception to Y6. It has been designed to support and challenge all pupils, and is built on the belief that EVERYONE can learn maths successfully.

All lessons follow the same structure:

- **Discover** - each lesson begins with a problem to solve, often a real-life example, sometimes a puzzle or a game. These are engaging and fun, and designed to get all children thinking.
- **Journaling** - the children have the opportunity to record how they have solved the problem. Showing their thinking allows the children time to process and digest what they have done.
- **Share** - the class shares their ideas and compares different ways to solve the problem, explaining their reasoning with hands-on resources and drawings to make their ideas clear. Children are able to develop their understanding of the concept with input from the teacher.
- **Think together** - the next part of the lesson is a journey through the concept, digging deeper and deeper so that each child builds on secure foundations while being challenged to apply their understanding in different ways and with increasing independence.
- **Practice** - now children practice individually or in small groups, rehearsing and developing their skills to build fluency, understanding of the concept and confidence.
- **Reflect** - finally, children are prompted to reflect on and record their learning from each session and show how they have grasped the concept explored in the lesson.

In addition to this, every morning between 8.30 and 9am classes in Y2-6 complete ten maths questions. This gives them the opportunity to practise and develop fluency in using all four operations, fractions, decimals and percentages as well as recapping other areas of mathematics such as shape, measure, time.

Children in the Foundation Stage and Y1 complete a mastering number session every day. This supports good number sense and lays the foundations for maths, so that all children will leave KS1 with fluency in calculation and a confidence and flexibility with number.

In the Foundation Stage there is mathematical provision both indoors and outdoors at all times. This includes a combination of teacher led; child initiated and free choice activities.

### **Progression of calculation methods**

We have policies for the progression of calculation methods to ensure continuity and consistency throughout the school. Copies of these policies can be found on the school website.

### **Cross-Curricular Links**

The skills learned in maths should be applied across the curriculum where appropriate. Some skills may be taught solely through creative lessons e.g. Roman Numerals or calculating scale on maps. Others may be practised such as measuring in a DT lesson or drawing graphs in science.

### **Computing**

Teachers incorporate the use of computing in their mathematics lessons when appropriate.

- Computers are used during whole class work to provide a starting point as well as to demonstrate concepts and encourage problem solving.
- Laptops/I-pads may be used by groups of children working independently within the classroom on programs relating to the mathematical objectives being addressed that day.
- Calculators should not be introduced until near the end of key stage 2, when their mental arithmetic and written methods are secure, and only in order to support pupils' conceptual understanding and exploration of more complex number problems.

### **Assessment**

Children in the Foundation Stage are assessed in accordance with the EYFS curriculum.

#### **Assessment for Learning**

Assessment for learning takes place prior to beginning a new mathematical key area. This will enable the correct starting point for each child to be found; allowing next steps to be identified or support put in place.

Assessment for learning takes place continually within maths lessons. This allows staff to move pupils on in their learning or to intervene and backtrack to improve progress.

#### **Formative Assessment**

NGRT tests are used termly to assess progress in maths in years 1-5.

#### **SATs**

SATs tests are administered to Y2 and Y6 in the summer term in accordance with the Standards and Testing Agency. SATs papers from previous years are also used to assess gaps in learning and pupil progress roughly once/twice a term.

### 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. Errors in basic skills such as number formation and relevant mathematical spellings should be identified and pupils given the opportunity to practise/correct.

### Homework

From Reception to Y6 children should practise their mental maths skills at home, in addition to at school; practising relevant number bonds facts or times tables.

In Y2 -Y6 children are set four questions to complete per day, to develop fluency/recall skills, in preparation for our daily morning maths sessions. Teachers go through the questions each morning, discussing the methods that can be used to answer/solve them.

### Resources

St Wilfrid's has a wide variety of practical, computing and textbook based resources to support the teaching and learning of maths.

Maths resources which are not needed on a daily basis in class are kept in the mobile classroom cupboard e.g. scales, metre sticks etc.

### Monitoring and Evaluation

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

D Mortimer January 2024