

## Wootton Wawen CE Primary School

### Mathematics Policy

#### Introduction

This document is a statement of the aims, principles and strategies for the teaching and learning of Mathematics at Wootton Wawen School.

This policy is a working document to provide guidance and information for teaching staff. Through the policy and the associated schemes of work we hope to ensure breadth, balance, continuity and progression for all the pupils.

#### What is Mathematics?

Mathematics teaches us how to make sense of the world around us through developing a child's ability to calculate, to reason and to solve problems. It enables children to understand and appreciate relationships and pattern in both number and space in their everyday lives.

#### 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."

**(National Curriculum 2014)**

#### Aims

The aims of mathematics are:

- To promote enjoyment and enthusiasm for learning through practical activity, exploration and discussion;
- Support children in becoming **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 (National Curriculum 2015);
- Encourage children to **reason mathematically** by following a line of enquiry, conjecturing relationships and generalisations, and developing an argument, justification or proof using mathematical language (taken from the New Curriculum);
- **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 (National Curriculum);
- Develop the ability to think logically and to work systematically;
- Develop positive attitudes to mathematics, recognising that mathematics can be both useful and enjoyable;
- Be able to use and apply mathematical skills in other curricular areas;
- Enable children to develop mental strategies and rapid recall of facts.

## **Teaching and Learning of Mathematics**

Mathematics is a core subject.

### **Planning**

We carry out the curriculum planning in mathematics in three phases (long-term, medium-term and the short-term). The National Curriculum programmes of study 2014 details the key objectives that need to be covered by each year group annually.

Our medium-term plans give details of the main teaching objectives for each term, divided into weekly blocks. They ensure appropriate balance and distribution of work across each term. Copies of these plans are kept and reviewed by the subject leader.

It is the class teacher who completes the weekly plans for the teaching of mathematics. We use the school planning sheet. These weekly plans list the specific learning objectives for each lesson, success criteria and give details of how the lessons are to be taught. The class teacher keeps these individual plans, and may adapt them, if assessments show the activities planned are not moving the children forward in their learning.

The expectation is that the majority of pupils will move through the programmes of study at broadly the same pace. Pupils who grasp concepts rapidly should be challenged through being offered rich and sophisticated problems that broaden their knowledge before any acceleration through new content. Teachers should try to avoid using programmes of study from other year groups.

### **Daily lesson**

Mathematics is taught in single age, mixed ability classes on a daily basis from Reception to Year 6 (except on Friday in KS 2) and supported and enhanced through other curriculum areas. Lessons normally take place each morning and lasts between 45 and 60 minutes. They usually consist of a pacey oral and mental starter, the main teaching activity, opportunities to investigate/experience, opportunities for self or peer assessment and the plenary.

Key features of numeracy lessons include:

- Lessons have clear learning intentions and success criteria;
- Activities are planned to encourage the full and active participation of all pupils and teachers differentiate tasks during the main part of the lesson in order to meet the needs of all abilities;
- Children are encouraged to be independent learners through selecting the appropriate difficulty level. Usually three levels of differentiated activity/learning are provided in KS 2 (bronze, silver and gold);
- Lots of challenges and extensions should be available to broaden children's understanding, as opposed to more of the same;
- Teachers place strong emphasis on the development of mental calculation skills;
- Children are asked to explain their methods using key mathematical vocabulary and to check for reasonableness;
- Formative assessment strategies are used;
- Appropriate pace of learning is in place and high expectations maintained;
- Account is taken of pupils' prior learning;
- High standards of presentation are expected;
- Pupils are regularly given opportunities to solve problems;
- Homework is given weekly;
- Good use is made of a wide range of resources;

- Pupils are praised effectively to encourage and motivate them and are well supported according to their needs;
- ICT is used to enhance learning and teaching experiences;
- Pupils are aware of the importance of mathematical work to everyday life and make relevant links.

### **Mental Maths**

Children need to develop the ability to calculate mentally, this will lead to greater proficiency and understanding in all areas of Mathematics, and is a crucial skill in the application of mathematics in the world outside the classroom. As a result, all pupils have a Numeracy Passport and work on targets to enable them to:

- build up a bank of number facts which they know off by heart, to include addition, subtraction, multiplication and division facts:
- use these known facts to perform an increasing range of calculations in their heads, using a variety of methods
- build up a good understanding of the Number System, based on Place Value of Base 10

They have the opportunity to use a wide range of resources such as number lines, number squares, digit cards, calculators and small apparatus to support their work.

### **Class Environment**

Each class room should have a numeracy working wall. On this should be the key learning objectives and vocabulary for the week and other information, including methods, that could be used by the children to support their learning.

### **Resources**

Teacher have access to the on-line planning scheme, Active Learn, from Pearson and also have a range of other written resources to support the teaching of mathematics across the school. All classrooms have a number line, number square and a range of small apparatus and games. These are kept in labelled trays and can be accessed easily by pupils. KS2 classes have calculators. Other equipment for specific topics is stored in a central resource area.

### **Roles and Responsibilities**

The role of the head teacher and the governors is to promote good practise in the teaching of mathematics by supporting the co-ordinator, ensuring the provision of staff in-set training and allocating adequate funding for resources within the constraints of the budget.

The co-ordinator is responsible for developing and monitoring the teaching of Mathematics throughout the school, providing support for colleagues and the purchasing and organisation of resources. They keep up to date with developments within the subject and notify the staff where appropriate. They

The class teacher is responsible for planning lessons, differentiating activities, assessments and recording of pupils' achievements.

### **Contribution of mathematics to teaching in other curriculum areas**

#### **English**

Mathematics contributes significantly to the teaching of English in our school by actively promoting the skills of reading, writing, speaking and listening. For example, we encourage children to read

and interpret problems in order to identify the mathematics involved. The children explain and present their work to others during the plenary sessions. Younger children enjoy stories and rhymes that rely on counting and sequencing. Older children encounter mathematical vocabulary, graphs and charts when using non-fiction texts.

### **Computing**

Children use and apply mathematics in a variety of ways when solving problems using ICT. Younger children use ICT to communicate results with appropriate mathematical symbols. Older children use it to produce graphs and tables explaining their results or when creating repeating patterns, such as tessellations. When working on control, children use standard and non-standard measures for distance and angle. They use simulations to identify patterns and relationships.

### **Science and DT**

Children apply their mathematical skills in science and DT through the use of measures and the collection and analysis of data.

### **PSHE & C**

Mathematics contributes to the teaching of personal, social and health education, and citizenship. The work that children do outside their normal lessons encourages independent study and helps them to become increasingly responsible for their own learning. The planned activities that children do within the classroom encourage them to work together and respect each other's views. We present older children with real-life situations in their work on the spending of money.

### **Spiritual, moral, social and cultural development**

The teaching of mathematics supports the social development of our children through working with others in groups' giving them the opportunity to discuss ideas and solutions.

### **Inclusion**

We plan lessons in mathematics to ensure all groups of learners are involved, including boys and girls, pupils with SEN, pupils with disabilities, Pupil Premium children, higher attainers, including Gifted and Talented children, pupils from all social and cultural backgrounds, children who are in care and those subject to safeguarding, pupils from different ethnic groups and those from diverse linguistic backgrounds.

### **Home-school Links**

Parents are encouraged to support Mathematics by

- Encouraging their children to find information through the use of books, ICT and discussions.
- Supporting in any homework activities.

### **Assessment, recording and reporting**

#### **Formative assessments**

These are a part of every lesson, and are recorded on short-term planning sheets. Their purposes are to:

- Check that children have grasped the main teaching points of the lesson; whether they have any misconceptions that need to be addressed, or whether they are ready to move onto the next stage;
- Check that the children are remembering number facts and can use mental calculation strategies;
- Give information that will help teachers adjust day to day lesson plans, and brief any support staff and adult helpers, about which children need assistance and how to assist them.

### **Summative assessments**

The purpose of these assessments is to:

- Review and record the progress children are making over time in relation to the key objectives, what they know and can do, whether they can apply their skills in a new context and whether any weaknesses remain:
- Identify children's progress against specific individual targets, including those in SEND support plans, so we can give them and their parents feedback and set new targets:
- In the Early Years records are kept on individual pupils' progress against key learning objectives using the school assessment grids.
- Pupil assessments are undertaken each term and a combination of teacher assessment and tests are used to assess pupils against the key learning objectives for their year group.
- These assessments are then recorded on Progress routes and i-track (an on-line monitoring system)
- Assessment grids are kept for bench mark children within each class. These are updated regularly by the class teacher and moderated within school.
- Formal statutory assessment is carried out at the end of Key Stage 1 (year 2) and Key Stage 2 (year 6). Parents are informed of their child's performance.

Pupil's progress in mathematics is reported to parents at consultation evenings held twice a year and through an annual report.

### **Monitoring**

The mathematics co-ordinator monitors the teaching and learning of mathematics by:

- Work trawls, usually undertaken each term.
- Lesson observations.
- Pupil interviews
- Monitoring of teacher planning.

### **Review**

This policy was adopted in the March 2015 and will be reviewed in the year 2018.