

## Mathematics Policy

### 1 Introduction

1.1 Mathematics is important in everyday life. It is integral to all aspects of life and with this in mind we endeavour to ensure that children develop a healthy and enthusiastic attitude towards mathematics that will stay with them.

This policy outlines what we are aiming to achieve in respect of pupils' mathematical education. It also describes our agreed approach to the planning, delivery and assessment of the mathematics' curriculum.

The National Curriculum (2014) for mathematics describes what must be taught in each key stage. The mathematics taught and the methods used reflect both the statutory requirements and the non-statutory guidance and recommendations outlined in the following documents:

- (A) The Revised Statutory Framework for the EYFS (2012)
- (B) The Development Matters in the EYFS (2012)
- (C) Mathematics Programmes of Study: key stages 1 and 2 National Curriculum in England (2014)
- (D) Mathematics Planning White Rose Documentation

This policy provides information and guidance for staff, governors and other interested persons.

1.2 Mathematics helps children to make sense of the world around them through developing their 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. A high-quality mathematics education will provide a foundation for understanding the world, the ability to reason mathematically, an appreciation of the beauty and power of mathematics, and a sense of enjoyment and curiosity about the subject (National Curriculum, 2014). Through their growing knowledge and understanding, children learn to appreciate the contribution made by many cultures to the development and application of mathematics.

At Upton Westlea Primary School we aim to:

- develop a positive attitude to mathematics as an interesting and attractive subject in which all children gain some success and pleasure;
- develop a fluent mathematical understanding through systematic direct teaching of appropriate learning objectives;
- encourage the effective use of mathematics as a tool in a wide range of activities within school and, subsequently, adult life;
- develop an ability in the children to express themselves fluently, to talk about the subject with assurance, using correct mathematical language and vocabulary;
- develop an appreciation of relationships within mathematics;
- develop ability to think clearly and logically with independence of thought and flexibility of mind;

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- develop an appreciation of creative aspects of mathematics and awareness of its aesthetic appeal;
- develop mathematical skills and knowledge and quick recall of basic facts;
- develop reasoning skills through opportunities to justify, enquiry and using mathematical language to prove;
- develop problem solving skills through applying their mathematical knowledge to solve problems;

## 2 Teaching and Learning Style

**2.1** The school uses a variety of teaching styles to cater for the different learning styles of pupils in mathematics lessons. Our principle aim is to develop children's knowledge, skills and understanding in mathematics. We do this through a daily lesson that has a high proportion of whole-class and group-direct teaching. During these lessons we encourage children to ask as well as answer mathematical questions. They have the opportunity to use a wide range of resources such as number lines, number squares, digit cards and small apparatus to support their work. Children use ICT in mathematics lessons where it will enhance their learning, as in modelling ideas and methods.

In all classes there are children of differing mathematical ability. We recognise this fact and provide suitable learning opportunities for all children by matching the challenge of the task to the ability of the child. We achieve this through a range of strategies – in some lessons through differentiated group work, and in other lessons by organising the children to work in pairs on open-ended problems or games.

We use teaching assistants to provide appropriate support to individuals or to groups of pupils. Teaching assistants within Upton Westlea Primary School are viewed as an important 'asset' to the school and, as such, are appropriately involved in the planning, delivery and assessing of the mathematics curriculum. Their knowledge, skills and understanding is constantly updated through involvement in school-based

Staff and pupils have access to a range of resources which are kept in classrooms and in the staff room (mathematical stories). Appropriate software is installed on the school network which enables children to enhance their learning, as in modeling ideas and methods. Numicon (multi-sensory maths kit) is used in the Foundation Stage, KS1, and early KS2 to support children with special educational needs throughout the school. Wherever possible, we encourage the children to use and apply their learning in everyday situations.

**2.2** Work is structured and planned to take account of all levels of ability. No child is ever put in a position where he/she will feel at a disadvantage, due to learning, race and culture, sensory or physical disabilities. We also use classroom assistants to support some children and to ensure work is matched to the needs of individuals.

## 3 Mathematics Curriculum Planning

**3.1** Mathematics is a core subject in the National Curriculum, and we use the Mathematics Programmes of Study: key stages 1 and 2 National Curriculum in England (2014) and the White Rose documentation as the basis for implementing the statutory requirements of the programme of study for mathematics.

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3.2 We carry out curriculum planning in mathematics in three phases (long-term, medium term and short-term). We carry out the curriculum planning in mathematics in line with the structures and recommendations outlined in the White Rose medium term planning documentation. Our weekly plans list the specific learning objectives for each lesson and give details of how the lessons are to be taught.

3.4 The class teacher completes weekly plans for the teaching of mathematics. Each weekly plan gives details of how the lessons are to be taught including Assessment for Learning opportunities and chances to apply knowledge. The plans are kept on the staff share system and the headteacher, deputy head and mathematics subject leader are responsible for monitoring the mathematics planning within our school.

### **4 Foundation Stage, Key Stage 1 and Key Stage 2**

#### **4.1 Foundation Stage**

We teach mathematics in our nursery and reception classes. Children develop mathematical concepts and skills using stages with Development Matters and the objectives set out in the Early Learning Goals, which underpin the curriculum planning for children aged three to five. We give all the children ample opportunity to develop their understanding of number, measurement, pattern, shape and space through varied activities that allow them to enjoy, explore, practise and talk confidently about mathematics. ICT is integral to this planning. We also use NUMICON (multi-sensory maths) as a resource to assist in children understanding the abstract concept of number.

#### **4.2 During Key Stage 1**

Pupils develop their knowledge and understanding of mathematics through practical activity, exploration and discussion. They learn to count, read, write and order numbers to 100 and beyond. They develop a range of mental calculation skills and use these confidently in different settings. They learn about shape and space through practical activities, which build on their understanding of their immediate environment. They grasp mathematical language, using it to talk about their methods and explain their reasoning when solving problems. We are encouraging fluency of mathematical skills at the appropriate level for the age group. Opportunities for Greater Depth are planned for to support children's greater understanding within Mathematics.

#### **4.2 During Key Stage 2**

Pupils use the number system more confidently. They move from counting reliably to calculating fluently with all four number operations. They are encouraged to try to tackle a problem with mental methods before using any other approach. Pupils explore features of shape and space and develop their measuring skills in a range of contexts. They discuss and present their methods and reasoning using a wider range of mathematical language, diagrams and charts. We are encouraging fluency of mathematical skills at the appropriate level for the age group. Opportunities for Greater Depth are planned for to support children's greater understanding within Mathematics.

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

### **5.1 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 plenary sessions. Younger children enjoy stories and rhyme that rely on counting and sequencing. Older children encounter mathematical vocabulary, graphs and charts when using non-fiction texts.

### **5.2 ICT**

The effective use of ICT can enhance the teaching and learning of mathematics when used appropriately. When considering its use, we take into account the following points:

- ICT should enhance good mathematics teaching. It should be used in lessons only if it supports good practice in teaching mathematics;
- Any decision about using ICT in a particular lesson or sequence of lessons must be directly related to the teaching and learning objectives for those lessons;
- ICT should be used if the teacher and/or the children can achieve something more effectively with it than without it.

Teachers can access Interactive Teaching Programs, games and useful mathematical web-sites through their interactive whiteboard, using ICT as a visual tool to aid the teaching and learning in mathematics. Laptops and iPads are available to support mathematical activities. Younger children use ICT to communicate results with appropriate mathematical symbols. Older children use it to produce graphs and tables when explaining their results or when creating patterns, such as tessellations.

### **5.4 Personal, Social and Health Education (PSHE) and Citizenship**

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.

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

The teaching of mathematics supports the social development of our children through the way we expect them to work with each other in lessons. We group children so that they work together, and we give them the chance to discuss their ideas and results.

### **5.6 Science**

Almost every scientific investigation or experiment is likely to require one or more of the mathematical skills of classifying, counting, measuring, calculating, estimating and recording in tables and graphs. In science pupils will for example order numbers, including decimals, calculate simple means and percentages, use negative numbers when taking temperatures, decide whether it is more appropriate to use a line graph or bar chart, and plot, interpret and predict from graphs.

## **6 Teaching mathematics to children with special needs.**

Within the daily mathematics lesson teachers not only provide activities to support children who find mathematics difficult but also provide appropriate challenges for children who are high achievers or Gifted and Talented. Where applicable children's SEND profile targets incorporate suitable objectives from the NNS Framework and teachers keep these objectives in mind when planning. Interventions are planned in for Mathematics throughout the year, for specific children.

## **7 Assessment and recording**

### **The assessment procedures within our school encompass:**

- Making ongoing assessments and responding appropriately to pupils during 'day-to-day' teaching. These 'immediate' responses are mainly verbal and are not normally recorded;
- Using knowledge of pupils drawn from ongoing pupil tracking records and the progression document to inform 'prior learning' at the beginning of each unit of work to guide our planning and teaching;
- Adjusting planning and teaching within units in response to pupils' performance;
- Use of the White Rose assessment papers and with KS2 Test Base papers are used to support assessment.

### **The school also uses:**

- SATs and optional SATs from Y2 upwards.
- Written tests are delivered, marked, scores collected and data analysed (three times a year) to show areas of strengths and weakness in each class from Y2 - 6. This information then aids the following terms planning.
- Books and planning are evaluated by the mathematics co-ordinator throughout the year.
- Pupil profiles used in the foundation stage.
- SPTO is used to track children's progress and help teachers identify class, group and individual gaps and areas for development.
- Individual pupil tracking.
- Teacher assessments for SEN children.

The results are used and analysed to inform teachers and parents of children's performance and potential. The results are also used to set challenging targets, track children and identify cusp groups. Analysis of assessment also informs of targeted areas of mathematical weakness in classes and throughout the school.

The mathematics co-ordinator is released from her classroom to monitor and evaluate the quality and standards in mathematics throughout the school with lesson observations and book scrutinies.

## **8 Parental involvement**

Parents are invited into school to look at and discuss with staff children's work two times a year. When significant changes are made to the mathematics curriculum parents will be sent the information. At the beginning of each parents are sent the Calculation Policy for their child's new year group. Reports are

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completed before the end of the Summer Term and parents are given the opportunity to discuss their child's progress.

### **9 Marking**

The schools marking policy is used in the marking of children's work in mathematics.

### **10 Homework**

It is our school policy to provide parents and carers with opportunities to work with their children at home. These activities may only be brief, but are valuable in promoting children's learning in mathematics. Activities are sent home on a regular basis and take the form of a range of activities to reinforce their learning.

### **11 The School Improvement Plan**

Mathematics is always a key issue in the school development plan. SATs and test results and analysis help define key areas for development in mathematics on a yearly basis, the key issues are then fed into the school development plan.

### **12 The Role of the Co-ordinator**

- To keep abreast of new developments
- To attend courses and relay information
- To support and advise staff
- To keep the head informed
- To monitor and analyse results
- To keep resources in good order, labelled, up to date, and within easy access of both children and staff
- To organise and lead curriculum meetings
- Lesson observations appropriate to school monitoring policy.

### **13 Including All Learners**

Inclusion involves the identification and minimising of barriers to learning and the maximising of resources to support learning and participation. We believe in giving all children strategies and skills to be successful in mathematics.

### **14 Equality Statement**

At Upton Westlea Primary School, we actively seek to encourage equity and equality through our teaching. As such, we seek to advance the equality of opportunity between people who share any of the following characteristic:

- gender;
- ethnicity;
- disability;
  
- religion or belief;
- sexual orientation;
- gender reassignment;

- pregnancy or maternity.

The use of stereotypes under any of the above headings will always be challenged.

## **15 Inclusion**

Upton Westlea Primary School is an inclusive school. We aim to make all pupils feel included in all our activities. We try to make all our teaching fully inclusive. We recognise the entitlement of all pupils to a balanced, broadly-based curriculum. We have systems in place for early identification of barriers to their learning and participation so that they can engage in school activities with all other pupils. We acknowledge the need for high expectations and suitable targets for all children.

Signed: **V Field**

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