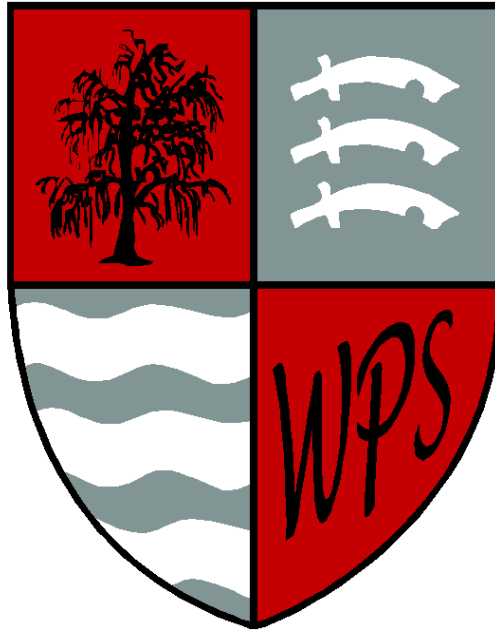


# Willowbrook Primary School



## Maths Policy

## **Introduction**

This policy outlines the teaching, organisation and management of the mathematics taught and learnt at Willowbrook Primary School.

The school's policy for mathematics is based on the National Curriculum 2014. The policy has been drawn up as a result of staff discussion and has the full agreement of the Governing Body. The implementation of this policy is the responsibility of all the teaching staff.

## **Teaching Mathematics**

### **Our Aims**

Our aim at Willowbrook is for all children to achieve the three main aims of the mathematics national curriculum:

- All pupils become fluent in the fundamentals of mathematics, including through varied and frequent practice with increasingly complex problems over time, so that pupils develop conceptual understanding and the ability to recall and apply knowledge rapidly and accurately.
- All pupils can reason mathematically by following a line of enquiry, conjecturing relationships and generalisations, and developing an argument, justification or proof using mathematical language.
- All pupils 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.

### **Maths Mastery**

Willowbrook has adopted a maths mastery approach to the teaching and learning of mathematics. A deeper understanding is achieved by pupils through an increased length of time on mathematical concepts and the opportunity to apply the skill taught in a variety of contexts. There are four key features that allow pupils to gain a deeper understanding of maths, thus mastering it: Fluency, variation, mathematical thinking and reasoning and an understanding of structure and representation.

#### **Fluency:**

Pupils develop a rapid recall of number facts and procedural fluency ie they can carry out column addition.

#### **Variation:**

Pupils apply their knowledge to varied questions i.e missing number boxes.

#### **Representation and Structure:**

Pupils learn to recognise and patterns and develop an understanding of the structure of mathematical concepts e.g what the parts of a fraction represent.

#### **Mathematical thinking and reasoning:**

Pupils can apply their knowledge to a range of problems and can explain how and why.

### **Teaching Time**

To provide adequate time for developing numeracy skills each class teacher provides a daily mathematics lesson. This may vary in length but will usually last for 50 to 60 minutes. A maths starter will take place at the start of each mathematics lesson which the teacher will use to revisit and consolidate mathematical concepts. In addition to this, a daily ten minute maths session will be taught outside of the main lesson which focuses on arithmetic skills. Instead of a ten minute maths session, year 6 have a 20 minute guided maths session focusing on arithmetic skills and

gap analysis. Links are also be made to mathematics within other subjects so pupils can develop their mathematic skills.

### Lesson Organisation

A range of styles of organisation are used. Approaches are chosen to suit the aims of particular lessons and to meet the needs of individual children. The styles of organisation include whole class, group and individual activities. There is a focus on direct teaching throughout lessons which involves a balance between different elements including teacher demonstration, explanation, questioning, and listening to, evaluating and discussing pupil's responses. Mathematics is taught as a discrete subject to establish a common pattern and routines that pupils can follow and to maximise time for teaching.

Lessons are generally divided into three parts:

- A starter to rehearse, sharpen and develop mental and oral skills or revisit a mathematical concept (about 10 minutes).
- The main teaching activity to include both teaching input and pupil activities and a balance between whole class, grouped, paired and individual work (about 30-40 minutes)
- A plenary session either within the lesson in the form of mini-plenaries or at the end to work with the whole class to address difficulty points, assess work and to discuss next steps (about 10 minutes).

Concrete apparatus and visual images are used to introduce a new concept before moving to the abstract. One key skill is the focus of the lesson in the form of a 'Can I' statement and success criteria detailing small parts of that skill is on display. Precise vocabulary is modelled by the teachers and pupils are encouraged to use mathematical vocabulary within their responses. Within pupils' intelligent practise, they must show fluency and depth in a variety of ways to master a concept. Some pupils will move onto greater depth challenges. Some pupils choose to use concrete apparatus and pictorial images to support their learning within their intelligent practise.

The majority of children will have the same starting point when a concept is first introduced. As the children progress through the lesson, some will move onto depth and greater depth challenges whilst others will continue with varied fluency.

### Curriculum

The school uses the White Rose scheme of work as a foundation to build on and there is a long-term plan which has been created through the agreement of staff. Teachers have access to Abacus textbooks, Twinkl and Third Space Maths in order to create their intelligent practice activities.

In Key Stage 2, the children have bookmarks which detail the national curriculum expectations for their year group, this is to provide an opportunity for children to track their progress through the year and help build an awareness of the mathematical areas that they are developing. Both key stages have a class maths target which is on display within the classroom.

### Out-of-class work and homework

The daily mathematics lessons provides opportunities for children to practise and consolidate their skills and knowledge, to develop and extend their techniques and strategies, and to prepare for their future learning. These are extended through out-of-class activities or homework. These activities will be short and focused. They will either consolidate a basic skill or provide a home context to their learning. In Key Stage 1 children have personalised maths packs in order to support children to develop their number fluency. They contain activities to engage the children in mathematical learning at home and their progress is monitored weekly in school. Key Stage 2 are set an arithmetic worksheet and a maths activity each week and once in year 6, children will have

a CGP maths homework book to complete set pages weekly. In addition, all pupils have access to Times Table RockStars, through a personalised login to rehearse their multiplication and division facts. Children are provided with a homework book to record the outcome of his or her homework and to be commented in by both teacher and parent/carer.

### Links between mathematics and other subjects

Mathematics contributes to many subjects within the primary curriculum and opportunities are given to draw mathematical experience out of a wide range of activities. This allows children to use and apply mathematics in real contexts.

## **School and Class Organisation**

### How we cater for pupils who are more able

More able pupils are challenged through the depth and greater depth activities provided by the class teacher. These activities take them wider and deeper into the concept where they are expected to apply their mathematical understanding to a variety of questions. When working with the whole class, teachers will direct some questions towards the more able to maintain their involvement. Teaching strategies will vary to meet the needs of each group, for example, the exceptionally able pupils may be given the independent activity with no teaching support initially, expecting the pupils to recall prior knowledge and skills to apply to the task, this would be followed up by focussed teaching time to clarify understanding and move learning forward. Very occasionally special arrangements will be made for an exceptionally gifted pupil e.g. they may be taught with children from a higher range or may follow an individualised programme with more challenging problems to tackle.

### Pupils with special educational needs and individual education plans

The daily mathematics lesson is appropriate for almost all pupils and teachers aim to include all pupils fully in their daily mathematics lessons. A range of visual, kinaesthetic and auditory approaches are taken to cater for a range of learning styles. All children benefit from the emphasis on oral and mental work and participating in watching and listening to other children demonstrating and explaining their methods. However, a pupil whose difficulties are severe or complex may need to be supported with an individual programme in the main part of the lesson or focus on fluency activities rather than varied fluency. In addition, interventions are put in place outside of the main mathematics lesson.

### Resources

A range of mathematical equipment and apparatus is available throughout the school. Apparatus that is used regularly is stored in the individual classrooms. Mathematical equipment is labelled and made accessible to the children for them to choose from where appropriate. If apparatus is required less frequently, it is stored centrally in the Year 3 and 4 resources cupboards. Our resources are regularly audited and are replaced or increased as necessary.

Pupils in all year groups can use calculators for checking their work, as an aid to solving everyday problems and as a tool for exploring number and pattern. A class set of calculators are shared between each partner year group.

There is an interactive display in each classroom which may be linked to a 'working wall' display. Both aim to prompt and interest the pupils, therefore enhancing learning.

### Presentation in books

#### **Date and Can I:**

When this is written in the book, children need to follow the presentation policy which is displayed in the classrooms:

- Short date, on the top left. Underlined with a ruler.
- Leave an empty line.
- Can I. Underlined with a ruler.

If the teacher has typed the date and Can I to be glued into the book, the letter-join font should be used and the date and Can I should still be underlined.

### **Recording in books:**

- When recording in their books, children need to try to ensure there is one digit per square.
- If an abacus book is being used for the lesson, the books should be referenced at the top of the page eg Y5 B2 P36 (Year 5-Book2- Page 36)
- If a child is completing a fluency and variation sheet/depth sheet/ greater depth sheet, this needs to be shown as a subheading before the piece of work is started. This could be pre-typed/ written on the sheet if it is getting glued in or written by the child/teacher. (Fluency and variation can be written as F+V or Varied Fluency.)
- Children should ensure that all answers are organised with numbered bullet points (e.g 1. if appropriate) and work vertically down the page.
- Written responses should be in joined handwriting.
- If the teacher deems it suitable to split the page in half to create two columns, children should fold the page and then draw a ruler line down the fold. If the second column is going to be used for jottings (E.g writing out times tables to support long division), the heading 'jottings' should be written and underlined at the top of the column.
- Children do not need to draw boxes or lines between each question they solve or lines between each lesson.
- A sharp pencil is always used.
- Rubbers are not allowed to be used unless it is for a graph or diagram.
- Green pens can be used to respond to next step comments.

### **Worksheets:**

- Teachers will use their own discretion as to whether a worksheet needs to be glued into a maths book.
- When using worksheets within maths lessons, ensure that unnecessary blank space or headings such as 'name' have been trimmed.
- Where possible, glue the sheets flat into the book, if there is not enough space, sheets should be folded in half and glued in.
- Any worksheets that the child has not completed/ worked from should not be glued in the book.
- If the teacher has created the worksheet by hand themselves, the presentation/ handwriting policy needs to be followed.

### Computing

Computing is used in many ways to support teaching and motivate children's learning. Computing involves the computer, calculators and audio-visual aids. They will however only be used in a daily mathematics lesson when it is the most efficient and effective way of meeting the lesson objectives. An Interactive Whiteboard is available to each class as well as Pcs and iPads.

### Assessment for Learning

We use both formative and summative assessment strategies to assess pupil attainment in mathematics. Learning outcomes are displayed and shared throughout each maths lesson in order for children to understand the purpose of the session. Through the use of success criteria, children are guided to assess their own work and identify strengths and areas for improvement. Teachers are constantly using formative assessment strategies throughout each maths lesson in order to

assess each child's understanding and progress and to identify difficulty points. Strategies include observing, questioning and discussion. Marking of work is fluid and often next steps are given to the pupils within the lessons through verbal feedback to ensure rapid progress. Lessons and future planning are adapted according to the on-going assessments the teacher makes in order to ensure the lessons are pitched appropriately to the needs of the group.

Summative assessments are also used to assess the children against national standards in Mathematics. We use a variety of standard written and mental tests and use the results to record progress. Teacher assessments are used alongside the summative assessments in order to assess each child accurately.

We also use target tracker statements as a tool to record the achievement of individual pupils. These statements are descriptors of national curriculum expectations for each year group and allow teachers to identify where there are gaps in the children's skills and understanding. These assessments are used to inform the planning of mathematics.

## **Leadership of Mathematics**

### **Role of the Subject Leader**

- Teach demonstration lessons.
- Ensure teachers are familiar with the national curriculum, maths mastery and help them to plan lessons.
- Lead by example in the way they teach.
- Prepare, organise and lead professional development meetings.
- Work co-operatively with the SENCO.
- Observe colleagues from time to time with a view to identifying the support they need.
- Attend training provided.
- Inform parents.
- Discuss regularly with the headteacher and the mathematics governor the progress of implementing the national curriculum in the school.
- Analyse and monitor data on pupil progress.
- Monitor teaching & learning through lesson observations, monitoring of planning and book scrutiny.

### **Monitoring and Evaluation:**

In order to effectively evaluate this policy, as a Governing Body we will ask ourselves the following questions on an annual basis or in light of any developments and changes in school:

Are our aims and objectives being met?

How can we tell?

Have there been any difficulties? Why have they arisen?

What have been the successes? What made these possible?

What do pupils and parents think about our policy?

Are there any local or national initiatives in which the school should join?

How can the policy be improved?