

# Woodthorpe J.I. School

## Mathematics Policy

### Policy Statement

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 for financial literacy and most forms of employment. A high-quality mathematics education therefore provides 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.

### Aims

Woodthorpe aims to ensure that each pupil reaches their full potential in mathematics whilst encouraging an enthusiasm and fascination about maths.

We also aim to increase the pupils' confidence in maths in order that they are able to express themselves and their ideas using the language of maths with assurance.

We are continually aiming to raise standards of achievement.

### Strands of Objectives

- Number  
number and place value  
addition and subtraction  
multiplication and division  
fractions (including decimals and percentages)
- Ratio and proportion
- Algebra
- Measurement  
length/height, perimeter, area and mass/weight  
capacity, volume, temperature and conversion  
time  
money and solving problems
- Geometry  
properties of shapes  
position and direction
- Statistics

### Early Years Foundation Stage

In Reception the class will be organised to promote social skills and the development of mathematical language and understanding. The Statutory Framework for the Early Years and Development Matters are used for planning. Mathematical understanding is developed through stories, songs, games and imaginative play to enable children to use and experiment with numbers. The children are given opportunities to count, sort, match, seek patterns and make connections, recognise relationships and work with numbers. Children also carry out work with shape, space and measures.

## **Transition to Year 1**

The transition will begin with more emphasis on learning as above. The majority of our pupils are ready to work on National Curriculum objectives on entry to year 1. For those children who are emerging towards the Early Learning Goals for Mathematics, the class teacher will gradually introduce the National Curriculum as they become ready i.e. they have achieved the expected standard in the Early Learning Goals. By the end of the Autumn term the rigour of the National Curriculum should be well established and the children able to work in more formal ways.

## **Organisation of Teaching and Learning**

The National Curriculum for Mathematics 2014 states what must be taught and ensures continuity and progression in the teaching of mathematics. All classes started teaching these programmes of study from September 2014 with the following exceptions:

- in the 2014 to 2015 academic year, pupils in years 2 and 6 will be taught the pre-2014 programmes of study in Mathematics.
- these pupils will sit the current key stage 1 and 2 tests respectively
- new tests will be available from 2016

Every teacher has a copy of the National Curriculum framework and a maths scheme of work which they use for planning. Each teacher has a statement bank to support the individual assessment of all areas of mathematics and the school will provide up to date assessment guidance to enable teachers to make a sound judgement on the attainment of each child.

Short term planning is carried out on a weekly basis, including appropriate learning objectives for mental maths sessions and the main activity, with reference to key vocabulary, information technology resources and other resources.

Lessons will be on a daily basis and will be 45 minutes to one hour long. The lesson structure is flexible to allow the teachers to meet the needs of children in any particular class. A further ten minutes a day is used for fun ways of practising targets, basic maths facts or playing maths games.

Teachers should use the school calculation policy as an aid when planning and teaching.

The teaching of maths will provide opportunities for a variety of different types of work and activities, which will be stimulating, challenging and motivating, engaging children who learn in visual, auditory and kinaesthetic ways. Interactive whiteboards and other relevant information technology resources are used to provide visual stimulus.

## **Mathematics targets**

Teachers and children work together to select appropriate targets to work towards. Children are included in setting and reviewing their targets through 'live discussions' with the class teacher. Targets are taught either discreetly or within Maths lessons. Parents are able to discuss their child's progress towards their targets with the class teacher at parents' evening twice a year. They will also see the progress their child has made when they look through their individual Learning Profile.

## **Assessment**

Assessment for Learning is a part of every lesson and is not recorded unless the teacher deems it necessary. Each teacher is asked to record the children who didn't achieve the learning objective, those who did better than expected and the action that they will take to address this. Pupils self-assess their progress towards the learning objective in lessons and regularly discuss their progress towards their individual targets. Teacher assessment will be used half-termly to identify pupil attainment. Teachers enter this information onto the school tracking system.

The Assessment Co-ordinator collates all of this data and SLT discuss the best use of staffing resources to accelerate progress in those children who need it. This is then built into staffing timetables.

Class teachers will be advised on what 'good progress' looks like and support will be given in Pupil Progress Meetings to identify actions to support individual or groups of children in each class.

## **Gifted and Talented pupils**

Where possible more able pupils will be taught in their own classes and stretched through differentiated group work and extra challenges. Quality first teaching is essential to ensure that gifted and talented pupils are given the opportunity to reach their full potential. Special arrangements may be made for exceptionally gifted pupils.

## **SEN**

Teachers will aim to include all pupils fully in their daily mathematics lessons. All children benefit from 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 individualised programme in the main part of the lesson. Individual action plans can be devised by the teacher and SENCO to ensure that the child receives the support needed to deal with the specific need.

## **Equal Opportunities**

As a staff we maintain an awareness of, and to provide for equal opportunities for all of our pupils in mathematics. We aim to take into account cultural background, gender, home circumstances and Special Needs, in both our teaching attitudes and in the published materials we use with our pupils. We incorporate mathematics into a wide range of cross-curricular subjects and seek to take advantage of multi-cultural aspects of mathematics.

In the daily mathematics lesson we can support children with English as an additional language in a variety of ways, e.g. repeating instructions, speaking clearly, emphasising key words, using picture cues, playing mathematical games, encouraging children to join in counting, chanting, finger games, rhymes etc.

## **Maths and ICT**

Calculators should not be used as a substitute for good written and mental arithmetic. They will therefore only be introduced near the end of key stage 2 to support pupils' conceptual understanding and exploration of more complex number problems, if written and mental arithmetic are secure.

Teachers should use their judgement about when ICT tools should be used. We have a wide range of ICT resources in school to support maths, these will be updated or replaced as and when necessary. iPads are available for use in classrooms to motivate pupils and enable them to complete personalised activities to achieve the learning objective or work towards an individual target. Pupils will also be required to apply their maths skills during computing lessons, therefore seeing the relevance of maths outside of the maths lesson.

### **Monitoring and review**

Monitoring of the standards of children's work and the quality of teaching in mathematics is the responsibility of Mathematics Co-ordinator and includes lesson observations, scrutiny of planning and children's books and tracking progress. The work of the co-ordinator also involves supporting colleagues in their teaching, being informed about current developments in the subject. The co-ordinator works alongside the Head Teacher to identify the strengths and weaknesses in the subject, indicating areas for further improvement and forming part of the school development plan

### **Reporting**

There are two parents' evenings for parents to meet with the class teacher where advice about the progress will be given to parents. Where the class teacher is not the child's maths teacher, a written comment will be provided accordingly. There will also be a summary of the pupils' achievement written on the annual report.

### **Maths in other curriculum areas**

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

### **Display**

We recognise the important role display has in the teaching and learning of mathematics. Every class has a maths working wall, where possible, in the main teaching area so that it is used as a support for teaching. It should display mathematical vocabulary, questions, written and/or mental strategies and relevant resources (such as number lines), to reflect the current block of work and support teaching and learning.

### **Resources**

There are several sets of textbooks, individual teacher books and a wide variety of resources, which are easily accessible either in individual classrooms or centrally located. There are interactive white boards in all classrooms which teachers can use to display interactive resources from Collins Connect. The Busy Ants Collins scheme supports the teaching of the new statutory framework 2014 in KS1 and KS2. Teachers are encouraged not to rely on a scheme of work but to use their creativity to excite and engage pupils in maths lessons, providing real reasons for learning.

### **Homework**

Children will be given homework in line with the school homework policy. Homework may be written, on-line or may be an activity that can be best undertaken in the context

of home. This will be set to support the child's learning and need not be set for the sake of setting homework.

In KS1 home challenges are designed to encourage children to make links between mathematics and the world around them. These homework tasks are often practical and encourage parents engage in their child's learning.

The online home work program MyMaths allows class teachers to set, monitor and assess maths homework with ease. It enables class teachers from year 2 - 6 to personalise homework so that all pupils are suitably challenged.

Signed:

Dated: 13 November 2014

Review: November 2017

### Good practice in primary mathematics: (Ofsted November 2011)

Woodthorpe adopts the following key findings, taken together, reflect the 'what' and 'how' that underpin effective learning through which pupils become fluent in calculating, solving problems and reasoning about number.

- Practical, hands-on experiences of using, comparing and calculating with numbers and quantities and the development of mental methods are of crucial importance in establishing the best mathematical start in the Early Years Foundation Stage and Key Stage 1. Couple this with plenty of opportunities for developing mathematical language so that pupils learn to express their thinking using the correct vocabulary.
- Understanding of place value, fluency in mental methods, and good recall of number facts such as multiplication tables and number bonds are considered by the schools to be essential precursors for learning traditional vertical algorithms (methods) for addition, subtraction, multiplication and division.
- Subtraction is generally introduced alongside its inverse operation, addition, and division alongside its inverse, multiplication. Pupils' fluency and understanding of this concept of inverse operations are aided by practice in rewriting 'number sentences' like  $3 + 5 = 8$  as  $8 - 3 = 5$  and  $8 - 5 = 3$  and solving 'missing number' questions like  $\quad - 4 = 5$  by thinking  $5 + 4 = 9$  or  $9 - 4 = 5$ .
- High-quality teaching secures pupils' understanding of structure and relationships in number, for instance place value and the effect of multiplying or dividing by 10, and progress in developing increasingly sophisticated mental and written methods.
- In lessons and in interviews with inspectors, pupils often chose the traditional algorithms over other methods. When encouraged, most showed flexibility in their thinking and approaches, enabling them to solve a variety of problems as well as calculate accurately.
- Pupils' confidence, fluency and versatility are nurtured through a strong emphasis on problem solving as an integral part of learning within each topic. Skills in calculation are strengthened through solving a wide range of problems, exploiting links with work on measures and data handling, and meaningful application to cross-curricular themes and work in other subjects.
- The schools are quick to recognise and intervene in a focused way when pupils encounter difficulties. This ensures misconceptions do not impede the next steps in learning.
- Many of the schools have reduced the use of 'expanded methods' and 'chunking' in moving towards efficient methods because they find that too many steps in methods confuse pupils, especially the less able. Several of the schools do not teach the traditional long division algorithm by the end of Year 6 (age 11) and most of those that do say that a large proportion of pupils do not become fluent in it.
- A feature of strong practice in the maintained schools is their clear, coherent calculation policies and guidance, which are tailored to the particular school's context. They ensure consistent approaches and use of visual images and models that secure progression in pupils' skills and knowledge lesson by lesson and year by year.
- These schools recognise the importance of good subject knowledge and subject-specific teaching skills and seek to enhance these aspects of subject expertise. Some of the schools benefit from senior or subject leaders who have high levels of mathematical expertise. Several schools adopt whole-school approaches to developing the subject expertise of teachers and teaching assistants. This supports effective planning, teaching and intervention.