



# Graiseley Primary School

## Mathematics Policy

### **National Curriculum Statement on Maths:**

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.

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## **A: Introduction**

This policy outlines the teaching, organisation and management of the mathematics at Graiseley Primary School from Reception to Year 6. In order to raise standards and enhance the delivery of mathematics, the school took the decision to take on board the SMARTMaths Program of study. This provides a complete programme of work for primary schools and covers all of the legal requirements of the National Curriculum. It is based around ten Big Ideas and uses concrete objects, exaggerated actions and special vocabulary to enable every child to access the mathematics being taught and succeed.

All teaching and support staff were trained in SMARTMaths at the beginning of implementing the program in spring term 2015. New staff have continued to receive training each term as necessary since.

This policy has been drawn up following the practices and principles of SMARTMaths and will be presented for full agreement at the next Governing body meeting. The implementation of this policy is the responsibility of the teaching staff.

### **1. Aims of teaching mathematics in our school**

- ❖ To teach the National Curriculum
- ❖ To promote enjoyment and enthusiasm for learning, through practical activity, exploration, discussion and reasoning.
- ❖ To enable each child to develop within their capabilities; not only for the mathematical skills and understanding required for later life, but also an enthusiasm and fascination about maths itself.
- ❖ To increase children's confidence in all areas of maths so they are able to express themselves and their ideas.
- ❖ To develop the ability to solve problems through decision-making and reasoning in a range of contexts.
- ❖ To develop the practical understanding of the ways in which information is gathered and presented.
- ❖ To explore features of shape and space and develop measuring skills in a range of contexts.
- ❖ To understand the importance of maths in everyday life.
- ❖ To be able to work independently and collaboratively.

## **B: Teaching Mathematics**

### **1. The structure of skills in the SMARTMaths Scheme**

#### **Years 1 - 6**

SMARTMaths is structured into 6 blocks throughout the year, one block for each half term. Each block covers 5 weeks of work and has a set of end of block objectives. The skills to be taught are covered in six different strands - Arithmetic 1, Geometry, Data

and Measure, Arithmetic 2, Reasoning and Practice. Each of these strands are taught on a separate day of the week to ensure the children are being taught a range of skills. The Practice strand is incorporated every day in each maths lesson or anytime during the day.

Day	Strand
Monday	Arithmetic 1
Tuesday	Geometry
Wednesday	Data and Measures
Thursday	Arithmetic 2
Friday	Reasoning

### **Foundation Stage**

SMARTMaths, in the foundation stage, is structured into 6 blocks throughout the year, one block for each half term. It focuses on one or more of the strands. The strands link to the EYFS profile points. These are: Counting, Number, Writing, Calculation, Shape, Position, Sorting and Data, Measure and Problem Solving. The planning consists of weekly plans where the main teaching is repeated throughout the week to enable the children to meet a set of end of week objectives, which build block-by-block over the year; ensuring the children make steady progress towards achieving the end of year objectives.

Throughout the week, the children have 5 group work areas including one outside. Within those areas two groups work with an adult on a guided activity and an adult-initiated activity (adult facilitates the learning then observes) and the rest of the children work independently on child-initiated activities linked to the strand and to the other areas of learning. These areas give the children the opportunity to practise new and prior learning in both formal and informal contexts. This planning is differentiated to enable all children to progress to their full ability.

### **2. Teaching time**

To provide adequate time for developing and applying mathematical skills, each class teacher will deliver a daily maths lesson, in the morning, which is one hour in length. In the foundation stage, mathematics is also taught daily in the morning session. This is delivered through whole class direct instruction, small group guided practice activities with an adult and child-initiated activities. On a daily basis, opportunities are provided for the children to develop and apply their mathematical skills through the other areas of learning.

### **3. Class organisation**

From Year 1 onwards, all pupils will have a dedicated daily mathematics lesson. Within each lesson, there is to be a good balance between whole-class work (direct instruction), guided work, partner work (A and B partners) and individual practice. Children are taught by their class teacher.

### **4. A typical lesson**

A typical 60-minute lesson in Year 1 to 6 will be structured like this:

#### **a. A review of previous learning (about 10 minutes)**

This will involve work with the whole class to respond to the teacher's marking. At this time, children may discuss the next steps or rectify misconceptions from the previous lesson.

**b. Daily practice (about 5 to 10 minutes)** This will involve whole-class work to rehearse, sharpen and develop mental and oral skills. This may also take place discreetly at other times during the day.

#### **c. The main teaching (about 30 to 40 minutes)**

This will include teaching input and pupil activities and a balance between whole class teaching (direct instruction), group work (guided practice), paired work (partners A and B teaching each other), and individual work.

#### **d. A review of the day's lesson (about 5 mins)**

This will involve work with the whole class and will be used to make links with other work and review the day's lesson.

In maths lessons, pupils engage in:

- The development of mental strategies
- Written methods
- Practical work
- Problem-solving
- Reasoning
- Mathematical discussion
- Consolidation of basic skills and routines

We endeavour to set work that is challenging, motivating and encourages the pupils to talk about what they have been doing. We achieve this in maths by teachers and teaching assistants providing assisted performance to respond to each child's individual needs. We also provide the opportunity for the children to attempt challenge questions where they are able to demonstrate and practise their new skills in using and applying questions.

## **5. The cycle of teaching and assessment**

The teachers use this cycle as a structure to support teaching and assessment. It is very flexible and the teachers use it as a way of structuring the teaching of the whole class and also individual groups/children i.e. some children might need more direct instruction so will work with the additional adult, while other children will practise their skills through guided practice, while the teacher supports where necessary (assisted performance). Children that are able to work independently are given extension work which allows them to fully embed their understanding of each new concept.

### **THE TEACHING CYCLE**



#### **Direct instruction**

The teacher leads the learning, teaching directly from the front of the class using big teaching.

#### **Guided practice**

The class work as a whole class or in groups or pairs under the guidance of the teacher. This enables children to practise and consolidate what they've seen demonstrated in direct instruction.

#### **Partner teaching**

Children work together in closely matched ability pairs, taking turns to teach each other while the teacher monitors. Explaining concepts to each other consolidates and deepens understanding, helping children to remember what they have learnt and teachers to decide on next steps.

## **6. Planning**

SMARTMaths provides plans for each year group for the year including end of key stage objectives, performance indicators and overviews for each strand. SMARTMaths has planning folders numbered 1 through to 6.

It is the responsibility of the teacher to adapt this planning in order to appropriately challenge all pupils.

### **7. Differentiation**

Teachers are encouraged to differentiate both when teaching and questioning pupils. Teachers can differentiate when teaching a concept by encouraging pupils to use concrete objects (e.g. cups) as well as pictorial representations (e.g. jottings) before applying abstract knowledge when approaching a problem. Pupils who are working below age-related expectation will be asked to complete expectations from previous years before they are ready to attempt ARE work. The SMARTMaths Progression documents should be used to track backwards or forwards, in line with the needs of the children.

### **8. Homework**

Homework is given by individual teachers who know the needs of each child. However, games are a big part of SMARTMaths as they are enjoyed by children (and adults) which enhances learning for all.

### **9. Links between mathematics and other subjects**

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 begin to use and apply mathematics in real context.

## **C: School and class organisation**

### **1. More Able and Gifted Pupils**

Where possible, more able pupils will be taught with their own class and stretched through partner teaching and extra challenges which apply the skills they have learnt in lessons. Teachers in KS2 also use Testbase to encourage the children to apply what they have learnt. When working with the whole class, teachers will direct some questions towards the more able to maintain their involvement and demonstrate to the rest of the class. Very occasionally, special arrangements will be made for an exceptionally gifted pupil e.g. they may be taught with children from a higher age range or may follow an individual programme with more challenging problems to tackle.

### **2. Pupils with Special Educational Needs (SEN)**

Teachers will aim to include all pupils in their daily mathematics lessons and will involve all children through assisted performance. Those children who cannot access the mathematics being taught, will work with a specified teaching assistant who will deliver SMARTMaths content but with more support and guidance.

### **3. Resources**

There is a range of resources to support the teaching of maths across the school. Resources for the delivery of SMARTMaths are stored in each classroom. Other additional equipment is stored in the maths cupboard. Each classroom has a working wall. Displayed on the working wall is as follows:

- Key vocabulary - relevant to current work
- Display of strategy used to do a calculation
- Each strand e.g. arithmetic 1, Geometry, Data and Measure, Arithmetic 2 and Reasoning
- Children's work
- Cup man sayings
- SMARTMaths banner

The SMARTMaths website ([smartmaths.org.uk](http://smartmaths.org.uk)) provides staff with medium term planning, curriculum coverage for each year, and progression documents to support them when planning and teaching. Other teaching resources are provided, such as editable PowerPoint slides, as well as videos to provide support for staff to ensure they are using the correct SMARTMaths teaching methods.

### **4. Assessment**

Assessment will be used to inform teaching in a continuous cycle of planning, teaching and assessment.

Short-term formative assessment will be an informal part of every lesson to check the children's understanding and give teachers information, which will help them to adjust day-to-day lessons plans. This will happen through observation, talking to the children, using a range of questioning, (live) marking, morning activities, online tools (Kahoot), reasoning & problem solving opportunities and 'Next Steps'. Marking will be carried out daily in accordance with the school's marking policy. Teachers are asked to keep a 'continuous assessment document' (based on SMARTMaths assessment documentation) which contain the aspects covered that term. They will then highlight the names of children who they believe are now secure/or falling behind in order to



inform future planning to challenge/support children. This short-term assessment will occur daily and weekly.

Summative assessment will occur each half term over the year in different forms. At the end of each half term, children will complete an 'end of half term assessment' where they will be given questions by the teacher to assess whether they have met the expected standard in that particular strand. This can inform the teacher whether interventions are needed in future. SMARTMaths provides guidelines to the types of questions that should be provided to assess at the 'expected standard' but also working at 'greater depth'.

At the end of each term, years 3-5 complete 3 NFER maths assessment papers (Arithmetic, Reasoning 1 & Reasoning 2). These are used, in conjunction with continuous formative assessment, to support the teacher's judgment of that pupil's ability. Years 2 & 6 complete similar SATs papers during this time. Scaled scores and QLA (question level analysis) inform teachers (and SLT) of attainment and progress across the school in maths, as well as any trends that could inform future planning.

All of these assessments are used together to measure each pupil's attainment which will be shared with SLT at the end of each term during progress meetings. Reasons are given if progress has not been made and what can be done to ensure the progress is happening. Where additional support is needed, this is planned.

In SMARTMaths, the marking will also indicate the part of the cycle in which the work has been carried out. For example, DI - Direct Instruction, GP - Guided Practice or PT - Partner Teaching. These will be in the left hand margin and at the end of the work, it will be annotated with H (high level of support) M (medium level of support) or I (completely independent work).

The new National Curriculum no longer uses levels to measure children's attainment and progress. Year 1,3,4,5 now has a set of standards that children are required to work towards achieving by the end of the year. At Graiseley Primary, we assess children as to whether they are Emerging (E), Developing (D) Secure (S) or Mastery (M) within that standard. We monitor progress against the year group standards to ensure that children are on track to secure or advance by the end of the year. The expectation is that children do not move on to the next year group standard but broaden, use and apply their knowledge and understanding which in turn leads to Mastery.

**Date: June 2021**

**Review date:**