



Gedney Church End and Lutton St. Nicholas Federated Primary Schools

## **Gedney Church End and Lutton St Nicholas Federated Primary Schools**

### **Mathematics Policy**

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## Gedney Church End and Lutton St. Nicholas Federated Primary Schools

### **Introduction:**

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 worlds, the ability to reason mathematically, and a sense of enjoyment and curiosity about the subject.

This policy takes into account the new National Curriculum (2014)

### **Purpose:**

The purpose of this policy is to describe our practice in Mathematics and the principles upon which this is based.

### **Aims:**

We aim to develop lively, enquiring minds encouraging pupils to become self motivated, confident and capable in order to solve problems that will become an integral part of their future.

The National Curriculum for mathematics aims to ensure that all pupils:

- Become **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
- **Reason mathematically** by following a line of enquiry, conjecturing relationships and generalisations, and developing an argument, justification or proof using mathematical language
- 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.

Children deserve:

- To be set appropriate learning challenges
- To be taught well and be given the opportunity to learn in ways that maximise the chances of success
- To have adults working with them to tackle the specific barriers to progress they face.

## **School Curriculum – Programme of Study**

### *Foundation Stage:*

The programme of study for the Foundation Stage is set out in the EYFS framework. Mathematics involves providing children with opportunities to develop and improve their skills in counting, understanding and using numbers, calculation simple addition and subtraction problems; and to describe shape, spaces and measures.

### *Key Stage 1 and 2:*

The Programmes of Study for mathematics are set out year by year for Key Stages 1 and 2 in the new National Curriculum (2014). The programmes of study are organised in a distinct sequence and structured into separate domains. Pupils should make connections across mathematical ideas to develop fluency, mathematical reasoning and competence in solving increasingly sophisticated problems. By the end of each key stage, pupils are expected to know, apply and understand the matters, skills and processes specified in the relevant programme of study.

### *Key Stage 1:*

The principal focus of mathematics teaching in Key Stage 1 is to ensure pupils develop confidence and mental fluency with whole numbers, counting and place value. This should involve working with numerals, words and the four operations, including with practical resources.

At this stage, pupils should develop their ability to recognise, describe, draw, compare and sort different shapes and use the related vocabulary. Teaching should also involve using a range of measures to describe and compare different quantities such as length, mass, capacity/volume, time and money.

By the end of Year 2, pupils should know the number bonds to 20 and be precise in using and understanding place value. An emphasis on practice at this early stage will aid fluency.

Pupils should read and spell mathematical vocabulary, at a level consistent with their increasing word reading and spelling knowledge at Key Stage 1.

### *Lower Key Stage 2:*

The principal focus of mathematics teaching in lower Key Stage 2 is to ensure that pupils become increasingly fluent with whole numbers and the four operations, including number facts and the concept of place value. This should ensure that pupils develop efficient written and mental methods and perform calculations accurately with increasingly large whole numbers.

At this stage, pupils should develop their ability to solve a range of problems, including with simple fractions and decimal place value. Teaching should also ensure that pupils

draw with increasing accuracy and develop mathematical reasoning so they can analyse shapes and their properties, and can confidently describe the relationships between them. It should ensure that they can use measuring instruments with accuracy and make connections between measure and number.

By the end of Year 4, pupils should have memorised their multiplication tables up to and including the 12 multiplication table and show precision and fluency in their work. Pupils should read and spell mathematical vocabulary correctly and confidently, using their growing word reading knowledge and their knowledge of spelling.

### *Upper Key Stage 2:*

The principal focus of mathematics teaching in upper Key Stage 2 is to ensure that pupils extend their understanding of the number system and place value to include larger integers. This should develop the connections that pupils make between multiplication and division with fractions, decimals, percentages and ratio.

At this stage, pupils should develop their ability to solve a wider range of problems, including increasingly complex properties of numbers and arithmetic, and problems demanding efficient written and mental methods of calculation. With this foundation in arithmetic, pupils are introduced to the language of algebra as a means of solving a variety of problems. Teaching in geometry and measures should consolidate and extend knowledge developed in number. Teaching should also ensure that pupils classify shapes with increasingly complex geometric properties and that they learn the vocabulary they need to describe them.

By the end of Year 6, pupils should be fluent in written methods for all four operations, including long multiplication and division, and , in working with fractions, decimals and percentages,

Pupils should read, spell and pronounce mathematical vocabulary correctly.

### **Cross curricular**

Mathematics teaches children how to make sense of the world around them through developing their ability to calculate, reason and solve problems. It is a core subject with a range of cross-curricular links but most often, it is best taught discreetly, using opportunities from other subjects to rehearse skills in a context. Numeracy involves developing confidence and competence in number work ;shape, space and measure; handling data and the using and applying of these skills.

### **Teaching and Learning**

The approach to the teaching of mathematics is based on:-

- A daily mathematical lesson
- A clear focus on direct, instructional teaching and interactive oral work with both the whole class and smaller ability groups.

The curriculum is delivered by the class teacher and differentiated in order to give appropriate levels of work. Planning is based on the new national Curriculum (2014). The expectation is that the majority of pupils will move through the programmes of study at broadly the same pace. However, decisions about when to progress should always be based on the security of pupils' understanding and their readiness to progress to the next stage. Pupils who grasp concepts rapidly should be challenged through being offered rich and sophisticated problems before any acceleration through new content. Those who are not sufficiently fluent with earlier material should consolidate their understanding, including through additional practice, before moving on.

## **ICT**

Information and Communication Technology can enhance the teaching of Mathematics significantly. It has ways of impacting on learning that are not possible with conventional methods. Teachers can use soft ware to present information visually, dynamically and interactively, so that children understand concepts more quickly.

## **Spoken language**

The National Curriculum for Mathematics reflects the importance of spoken language in pupils' development across the whole curriculum – cognitively, socially and linguistically. The quality and variety of language that pupils hear and speak are key factors in developing their mathematical vocabulary and presenting mathematical justification, argument or proof. They must be assisted in making their thinking clear to themselves as well as others and teachers should ensure that pupils build secure foundations by using discussion to probe and remedy their misconceptions.

## **Inclusion and Equal opportunities**

We believe that equality at our schools should permeate all aspects of school life and is the responsibility of every member of the school and wider community. We will always strive to ensure equality of access to maths for all pupils irrespective of their gender, ethnicity, disability, religious beliefs/faith tradition, sexual orientation, age or any other of the protected characteristics (Single equalities Act 2010)

Wherever possible we aim to fully include all pupils in maths teaching. Through our maths teaching we provide learning opportunities that enable all pupils to make progress. We set suitable learning challenges and respond to each child's individual needs.

## **The Contribution of Mathematics to the Development of Unique British Values**

In our federation, we recognise the duty placed on all schools to promote what are now known as Unique British Values. All subjects within the National Curriculum have the capacity to make a direct contribution to developing our pupils' understanding of what it means to be British in the 21<sup>st</sup> Century.

The Department for Education defines Unique British Values as follows:

1. Democracy: respect for democracy and support for participation in the democratic process
2. The Rule of Law: respect for the basis on which the law is made and applies in England
3. Individual Liberty: support and respect for the liberties of all within the law
4. Mutual Respect and Tolerance: support for equality of opportunity for all and respect and tolerance of different faiths, religious and other beliefs

The subject of Mathematics can contribute to the development of these values in the following ways:

- Focusing on the lives of significant British mathematicians from history
- Understanding how Britain has been influenced by other great cultures and how we have also shaped the world
- Promoting mathematics as a universal language that can give us all a shared identity
- The exploration of sensitive issues whilst maintaining tolerance and respect for the views and beliefs of others
- Visits into school from people who possess a specialism in mathematics
- Working co-operatively with others, sharing ideas and resources, peer assessment and encouraging support for each other
- Exploring controversial issues in mathematics e.g. the war effort, armaments, mass production and the industrial revolution

## **Resources**

Each class has appropriate resources including mathematical dictionaries and individual mathematics packs for all pupils. Any resources which are not used regularly or required are stored centrally.

## **Displays**

All classrooms should have a mathematical working wall with age related resources displayed as well as resources relating to the current work, including relevant mathematical vocabulary.

## **Assessment**

Assessment for Learning is fundamental to raising standards and enabling children to reach their potential. Assessment in mathematics takes place daily using a range of strategies such as marking and feedback (in line with the schools policy) and verbal discussions with children. This information informs subsequent planning and next steps in teaching and learning. Planning is annotated to demonstrate adaptations and provide feedback about children's individual/ group progress.

Children in the Foundation Stage are assessed in accordance with the EYFS curriculum.

Year 1 to Year 6 are assessed against the criteria in the relevant term for that year group in the Assessment without Levels folders. These judgements will be moderated three

times a year through the Pupil Progress meetings carried out by the Literacy and Numeracy leaders.

Statutory SATs and optional SATs will be analysed to inform planning and the way forward.

## **Reporting**

Parent consultation evenings are held in the Autumn term and Spring terms where children's progress and achievements are discussed. All parents receive a yearly report on which there is a summary of their child's achievements and progress, together with specific comments on the child's effort and engagement with mathematics. This report also includes, if appropriate statutory test and teacher assessment results.

## **Roles and Responsibilities**

### *The Head teacher:*

- To actively support and encourage staff, praising good practice and supporting staff development, in service training and resources.
- To monitor teaching and learning through lesson observations, learning environment walks, work scrutiny and monitoring planning and give informative and constructive feedback.

### *Subject leader:*

- To work with the Head teacher and Senior Management Team to monitor, plan and develop the subject to allow for progression, continuity and high standards of attainment in Mathematics,
- To support colleagues in the teaching of mathematics and provide a strategic lead and direction in the subject.
- To manage periodic book scrutiny to ensure the curriculum is being covered and the marking policy is being adhered to.
- To monitor progress in Mathematics, highlight and plan actions required.
- To take responsibility for auditing and organising Mathematics resources.
- To keep up to date with developments in mathematics education and to inform colleagues as appropriate.
- To draw up an annual action plan for mathematics.
- To review the school Mathematics policy as appropriate.

*The class teacher:*

- To be responsible for the planning, teaching and assessment of Mathematics to their class.

*The Governors:*

- To appoint a named governor who has the responsibility for Mathematics, they will meet with the subject leader to review plans and actions.

### **Review**

The mathematics policy will be reflected in our practise and subject to review on an annual basis.

**Signed by Head Teacher:**

**Ratified by Governors:** December 2015

**Updated:** December 2015