

Garstang Community Primary School

Mathematics Policy November 2019

Mathematics is a beautiful subject, which has its own unique place in the curriculum at Garstang Community Primary School. It provides pupils with powerful ways to describe, analyse and change the world. Pupils can experience a sense of awe and wonder as they solve a problem for the first time, discover a more elegant solution, conjecture and make links between different areas of mathematics.

Mathematics is the means of looking at the patterns that make up our world and the intricate ways in which these patterns are constructed. The language of mathematics is international. The subject transcends cultural boundaries and its importance is universally recognised. Mathematics helps us to understand and change the world for the better.

Mathematics makes a significant contribution to modern society, as the basic skills of mathematics are vital for life opportunities. Furthermore, mathematics develops highly valued cognitive skills.

Our pupils become able to think mathematically, enabling them to reason and solve problems in a range of contexts.

Maths Coordinator: Mr A Dignan

Mathematics Curriculum Policy

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 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.” (The National Curriculum in England, DfE, 2014)

Garstang Community Primary School Mathematics Curriculum Aims

We aim to:

- foster positive attitudes, fascination and the excitement of discovery through the teaching and learning of mathematical concepts
- enable our pupils to use and understand mathematical language and recognise its importance as a language for communication and thinking
- enable our pupils to think and reason mathematically
- enable our pupils to become fluent mathematicians with a repertoire of strategies that can be applied in many contexts
- broaden children’s knowledge and understanding of how mathematics is used in the wider world

Statutory Requirements

Statutory requirements for the teaching and learning of Mathematics are laid out in the National Curriculum (2014) and in the Communication and Language (Prime) and Mathematics (Specific) Areas of the Statutory Framework for Early Years and Foundation Stage (2012).

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 develop conceptual understanding and the ability to recall and apply knowledge rapidly and accurately
- **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

(National Curriculum July 2014)

Governing Body

Regular reports on the progress of the Mathematics Curriculum are made to the Governing Body via the nominated Mathematics Curriculum Governor and through the Mathematics Curriculum policy. This policy is reviewed every two years and in light of statutory changes to the National Curriculum.

Subject Organisation

The National Curriculum for Mathematics (2014) describes what must be taught in each Key Stage as well as defining a programme of study for each year group. At Garstang Community Primary School, the *White Rose Mathematics Scheme of Work* is used to support planning and assessment alongside a set of ten key performance indicators, which have been developed for each year group.

In the Foundation Stage, the curriculum is guided by the EYFS Profile Early Learning Goals and Development Matters.

Teaching Methods and Approaches

At Garstang Community Primary School, Mathematics is taught using 'Mastery' approaches. The NCETM 'Five Big Ideas' describe the characteristics of our mathematics teaching. These are:

- **Coherence:** New ideas are connected to concepts that have already been learned. Once these are understood and mastered, these are used again in the next steps of learning. All steps of learning are made in small steps.
- **Representation and Structure:** Representations (Concrete, Pictorial or Abstract) expose the mathematical structures being taught. The aim is that pupils can do the maths without recourse to the representation.
- **Mathematical Thinking:** If the ideas taught are to be understood, they must be actively worked on, thought about, reasoned with and discussed with others.
- **Fluency:** Pupils must be able to recall facts and procedures quickly and efficiently. Pupils should have the flexibility to move between different contexts and representations of mathematics.
- **Variation:** Pupils must experience concepts in a variety of ways in order to ensure that mechanical repetition is avoided. Pupils should see examples that do display a concept alongside examples which do not. (For example, when pupils look at an image of a hexagon and are asked why the shape not a square, they will be required to think about the essential properties of a square.) Through variation, teachers can present a concept with gradually increasing levels of complexity, ensuring progress and depth of understanding.

Cross-curricular links

Mathematics is taught mainly as a separate subject but every effort is made to link maths with other areas of the curriculum, often through science, design technology, computing, history and geography. We try and identify the mathematical possibilities across the curriculum at the planning stage. We also draw children's attention to the links between maths and other curricular work so children see that maths is not an isolated subject.

In the Early Years, these links are more evident because of the less formal timetable.

Inclusion and Grouping

All pupils are provided with equal access to the Mathematics Curriculum and pupils are taught in mixed ability, whole class groups. It is our expectation that all pupils can and will achieve, and that the large majority of pupils will progress through the curriculum content at the same pace. Differentiation emphasises the development of depth of understanding and ensures individuals are supported. Teachers use precise questioning to check conceptual and procedural knowledge, assessing pupils' learning during the lesson and identifying those who require intervention. Intervention takes place the same day or before the next mathematics lesson wherever possible, ensuring that all pupils keep up.

Where pupils have fallen behind their peers, they will continue to be taught the age-related curriculum content and will access additional intervention outside the daily mathematics lesson in order to target gaps in their learning.

Formative Assessment

Our teachers make on-going daily assessments of pupil attainment and progress through a wide range of daily teaching and learning activities.

These assessments enable our teachers to plan the next steps in learning. These teacher assessments are used to inform our summative Teacher Assessments at the end of each term throughout the school year, and to support the SLT and Subject Leader in analysing pupil progress.

Summative Assessment

Teacher Assessments for Mathematics are made and reported to the head teacher each term.

Statutory Assessment takes place at the end of EYFS, KS1 and KS2. In Years 1, 3, 4 and 5 optional tests, published by NFER, are used to support our teacher assessments.

We will continually review the effectiveness of these tests in terms of supporting our assessment of pupils' progress and attainment.

Mathematics Curriculum Books

In all pupils' written work we expect to see evidence of intelligent practice and reasoning.

Intelligent practice is a key feature of teaching for mastery. It is the careful selection of pupil activities and practice questions, so that, rather than pupils repeating a mechanical activity, they are taken down a path where the thinking process is practised with increasing creativity.

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| $2 \times 3 =$ | $6 \times 7 =$ | $9 \times 8 =$ |
| $2 \times 30 =$ | $6 \times 70 =$ | $9 \times 80 =$ |
| $2 \times 300 =$ | $6 \times 700 =$ | $9 \times 800 =$ |
| $20 \times 3 =$ | $60 \times 7 =$ | $90 \times 8 =$ |
| $200 \times 3 =$ | $600 \times 7 =$ | $900 \times 8 =$ |

In this example, by working through the calculations in this example, a pupil carries out the procedural operation of multiplication. However, through connected calculations, the child has the opportunity to think about key concepts involving multiplication and place value. This would be followed by discussions with peers and teachers about the connections observed.

Parental Involvement

As the child's first teacher, we recognise and appreciate the huge part that parents play in their child's progress in Mathematics. Through weekly Maths Homework, parents are asked to support their children in learning key facts, such as time tables and number bonds, and to practice key skills, such as reading the time and measuring.

Regular communication with parents is essential. Should we have any concerns about a child's progress in Mathematics, we speak to parents at the earliest opportunity to discuss how their child might best be supported.

The parent's role in supporting their child's progress in Mathematics is a key focus of annual Curriculum Evening and twice-per-year, Parents' Evenings. Additionally, over a period of time, we deliver parental information workshops, especially relating to progression in calculation.

Role of the Subject Leader

The subject leader is responsible for improving the standards of teaching and learning in Mathematics through monitoring, evaluation and by developing a strategic vision for the future. Activities to be regularly undertaken by the subject leader include:

- evaluation of the effectiveness of long, medium and short term curriculum planning
- monitoring and analysis of sequences of teaching; lesson observations and pupil work samples
- pupil conferencing and teacher questionnaires
- analysis of data, both internally tracked and nationally published
- identifying CPD needs and auditing, evaluating and monitoring such CPD and its impact
- purchasing effective resources to support the Mathematics curriculum
- keeping up to date with curriculum developments and collaborating with colleagues beyond school to ensure continuous improvement in the quality of teaching
- evaluating the provision and impact of intervention
- monitoring and evaluating the quality and effectiveness of the learning environment
- reporting to the school's Governing Body