



Gildredge House Primary School Mathematics Policy

Learning is defined in the Ofsted handbook as ‘An alteration in long-term memory.’ In order to achieve this, the curriculum needs to be in an order so that new knowledge and skills build on what has been taught before, meaning pupils can connect new knowledge with existing knowledge and work towards clearly defined end points.

Purpose

Mathematics teaches us how to make sense of the world around us through developing a child’s ability to calculate, to reason and to solve problems. It enables children to understand and appreciate relationships in pattern, in both number and space, in their everyday lives. As a creative activity it involves imagination, intuition and discovery, it is a way to communicate information and ideas. Through their growing knowledge and understanding, children learn to appreciate the contribution made by many cultures to the development and application of mathematics. The importance of mathematics across the curriculum is highlighted in much of the work we do.

This document draws on the knowledge, understanding and experience of our staff and provides a current picture of our intent, implementation and impact statements as well as planning strategies and teaching methods. This document is underpinned by our calculation policy.

SEND Provision

We recognise as a school, the importance of ensuring that children identified with Special Educational Needs and/or Disabilities have access to an ambitious Maths curriculum. We will therefore aim to plan first for our students with SEND, with appropriate tasks, support and level of challenge to enable them to access the curriculum. Advice can be sought from the school’s SENDCo where applicable.

Aims

At Gildredge House, our progressive curriculum for Maths 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 nonroutine problems with increasing sophistication, including breaking down problems into a series of simpler steps and persevering in seeking solutions.

Mathematics is an interconnected subject in which pupils need to be able to move fluently between representations of mathematical ideas. The programmes of study are, by necessity, organised into apparently distinct domains, but pupils should make rich connections across mathematical ideas to develop fluency, mathematical reasoning and competence in solving increasingly sophisticated problems. They should also apply their mathematical knowledge to science and other subjects.

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.



**Gildredge
House**

Intent, Implementation and Impact

The main intention of our Maths curriculum is to build a mastery curriculum subject which is designed to develop children's knowledge, understanding and curiosity of mathematical concepts from the Early Years through to the end of Y6. At Gildredge House, we aim to take small steps to develop a love of Maths and develop resilient learners who have the skills to solve real life problems.

Our intent is underpinned by:

	Fluency:	Problem solving:	Reasoning:	Vocabulary rich environment:
Underpinned by:	We intend for all pupils to 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.	We intend for all pupils to 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.	We intend for all pupils to reason mathematically by following a line of enquiry, conjecturing relationships and generalisations, and developing an argument, justification or proof using mathematical language	We intend to create a vocabulary rich environment, where talk for maths is a key learning tool for all pupils. Pre-teaching key vocabulary is a driver for pupil understanding and develops the confidence of pupils to explain mathematically.



- In school, we follow the national curriculum and use White Rose Schemes of Work as a guide to support teachers with their planning and assessment. Units of learning are broken down into a series of small, connected steps with each building on the children's prior learning. Each lesson focuses on one small step or a series of small steps. Pupils in the Early Years are prepared for the National Curriculum by developing a solid conceptual understanding of number, shape, space and measure. Learning throughout the school is introduced using a concrete, pictorial and abstract approach so that pupils develop a conceptual understanding of mathematics through a variety of representations.
- A range of planning resources including those provided by the White Rose Hubs, NCETM and NRICH are used.
- The calculation policy is used within school to ensure a consistent approach to teaching the four operations over time.
- We continuously strive to better ourselves and frequently share ideas and things that have been particularly effective. We also take part in training opportunities and regional networking events to ensure all teachers have strong subject knowledge.
- Through our first quality teaching we continuously monitor pupils' progress against expected attainment for their age, making formative assessment notes where appropriate and using these to inform our discussions in termly Pupil Progress Meetings and update our summative school tracker.
- At the start of each new topic, key vocabulary is introduced and revisited regularly to develop language acquisition, embedding as the topic progresses.
- All lessons begin with a short assessment to support retrieval practice and develop long-term memory.
- Children are taught through clear modelling and have the opportunity to develop their knowledge and understanding of mathematical concepts.
- Children who have shown their understanding at a deep level within the unit, will have opportunities to apply these skills in a GREATER DEPTH activity. This should be challenging and ensure that children are using more than just one skill to be able to answer the mathematical problems.
- Reasoning and problem solving are integral to the activities children are given to develop their mathematical thinking.
- Maths Blast, The Gildredge Glitter Ball and regular times table practice support arithmetic skills and speed.
- Resources are readily available to assist demonstration of securing a conceptual understanding of the different skills appropriate for each year group.
- Children are encouraged to explore, apply and evaluate their mathematical approach during investigations to develop a deeper understanding when solving different problems / puzzles.
- A love and curiosity of maths is encouraged throughout school via links with others subjects, applying an ever growing range of skills with growing independence.
- Children with additional needs are included in whole class lessons and teachers provide scaffolding and relevant support as necessary. For those children who are working outside of the year group curriculum, individual learning activities are provided to ensure their progress.



- Most children will make at least good progress from their last point of assessment or from their starting point prior to starting school.

This will be measured by the:

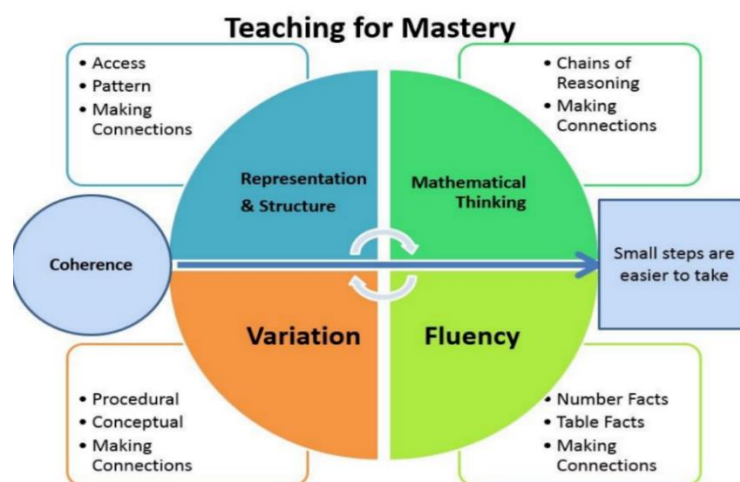
Progress from a child's starting point.

Attainment at each point of assessment.

- Children demonstrate a quick recall of facts and procedures. This includes the recollection of the times table.
- Children develop the flexibility and fluidity to move between different contexts and representations of maths.
- Children develop the ability to recognise relationships and make connections in maths lessons.
- Children show a high level of pride in the presentation and understanding of the work
- Mathematical concepts or skills are mastered when a child can show it in multiple ways, using the mathematical language to explain their ideas, and can independently apply the concept to new problems in unfamiliar situations.
- Pupils know how and why maths is used in the outside world and in the workplace. They know about different ways that maths can be used to support their future potential.
- Pupils use acquired vocabulary in maths lessons. They have the skills to use methods independently and show resilience when tackling problems.
- Teachers plan a range of opportunities to use maths inside and outside school.

Teaching for Mastery

Maths Mastery is defined by The National Centre for Excellence in the Teaching of Mathematics as 'Mastering maths means pupils of all ages acquiring a deep, long-term, secure and adaptable understanding of the subject. The phrase 'teaching for mastery' describes the elements of classroom practice and school organisation that combine to give pupils the best chances of mastering maths. Achieving mastery means acquiring a solid enough understanding of the maths that's been taught to enable pupils to move on to more advanced material.'



Mastery with Great Depth:

- Solve problems of greater complexity (where the approach is not immediately obvious) and they can demonstrate creativity in their approach.
- Independently exploring and investigating mathematical contexts and structures.
- Communicating results clearly and systematically.
- Explain and generalise about mathematics.



Planning for Mastery

Mathematics is a core subject in the National Curriculum and we use the new National Curriculum, as well as the Cambridge Curriculum, as our starting point as a basis for implementing the statutory requirements of the programme of study for mathematics.

Primary staff use the “White Rose Maths Hub” documents to support planning and use term by term overviews, which are linked to the new National Curriculum. The White Rose documents are broken down into fluency, reasoning and problem solving, which are the key aims of the curriculum. Planning ensures small steps are taken to deepening a child’s mathematical understanding. Each objective has with it examples of key questions, activities and resources which staff can use in their own classroom, to supplement a flexible and creative approach. The whole class is taught mathematics together and the learning needs of individual pupils are addressed through careful small step scaffolding, skilful questioning and appropriate intervention is given in order to provide the necessary support and challenge. Conceptual variation and procedural variation are used. These provide intelligent practice that embeds deep learning.

Teaching and Learning

The principal focus of mathematics teaching in Key Stage 1 is to ensure that pupils develop confidence and mental fluency with whole numbers, counting and place value. This involves working with numerals, words and the four operations, including with practical resources (e.g. concrete objects and measuring tools). Pupils develop their ability to recognise, describe, draw, compare and sort different shapes and use the related vocabulary. Teaching also involves 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. There is an emphasis on practical application at this early stage.

The principal focus of mathematics teaching in Primary 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 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.

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, 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 for 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.

A range of teaching strategies will therefore be used, including:

- Direction
- Demonstration
- Modelling
- Scaffolding
- Explanation to clarify and discuss
- Questioning to probe students’ understanding, to cause them to reflect on and refine their work and to extend their ideas
- Initiating and guiding exploration



- Discussion

Effective use is made of teaching assistants' time and expertise to develop students' skills further, in all year groups.

Lesson Structure

- **Big Picture:** Lessons are sharply focused; digression is generally avoided and key new learning points are identified explicitly related to real life examples e.g. The Big Picture.
- **Fluency:** Lessons start with a whole class arithmetic activity e.g. related to The Gildredge Glitter Ball. This helps to verbalise and embed mathematical ideas and provides pupils with a shared language to think about and communicate mathematics.
- **In-Focus Problem:** A problem for the children to solve which revisits previous learning or assesses prior knowledge of the new topic
- **Ping Pong Learning:** Class teacher models key new learning. There is regular interchange between concrete/contextual ideas, pictorial representations and their abstract/symbolic representation during this stage.
- **Guided Practice:** Class solve a problem before solving similar problems independently. Throughout the independent tasks feedback and discussions are encouraged as well as opportunities to make connections to other areas of maths.

The children are encouraged to use rich vocabulary and make comparisons to develop a deep knowledge and understanding of a concept. All learning links to the Calculation Policy and uses a varied range of resources, appropriate to the topic.

Use of ICT

The use of ICT will be built into the delivery of the mathematics programme wherever appropriate. In particular, activities can be demonstrated through the use of the interactive whiteboard. In addition, wherever possible, good use will be made of ICT by the students for a range of purposes connected to the mathematics programme, eg solving problems, producing graphics and tables when explaining their results or when creating repeating patterns, such as tessellations. When working on programming, children use standard and nonstandard measures for distance and angle. Times Table Rock Stars provides children with opportunities to practise recall of multiplication and division facts at home and in school.

Cross - Curricular Opportunities

We look for opportunities to promote mathematical skills through all areas of the curriculum, as is testified by the various displays evident across the Primary School and covering our many, and varied topics.

Equal Opportunities

We are committed to an environment that promotes equal opportunities for all students, regardless of their race, colour, gender or ability and work undertaken reflects this commitment.

Assessment, recording and reporting

Assessment in mathematics should reflect the general principles and procedures laid down in the Primary School's assessment and marking policies. The following points should be adhered to by all teaching staff in Primary School:

- Medium term assessments, using the "White Rose Maths Hub" assessments are completed three times a year, with results entered on SIMs.
- Staff provide an analyses of their class in mathematics three times a year, under the following headings: FSM & LAC; SEN; Dual language; poor attenders; girls; boys; summer born.
- Two parent consultations are held, in the autumn and spring term, in which targets in Maths are discussed with the student's parents/carers.
- A written report on each student's achievement in Maths is sent to parents as part of an overall report on the student's progress to date in the summer term of each academic year.
- Both formative and summative assessment is carried out across Years 1-6 and on-going formative assessment through observations is carried out in the Early Years Foundation Stage.



Feedback

Marking will be carried out regularly and in accordance with the Primary's marking policy. We encourage the active involvement of our students in their own learning by providing oral feedback and giving them time through the day to act upon this. We encourage students, through paired and individual working, to assess themselves and also understand how to improve. In Years 3 and 4 an editing pen is used for pupils to provide written responses to improve their work. In Year 5 and 6, the children mark their own work where possible and use an editing pen to improve their work or justify their reasons and extend their learning.

Moderation

Staff meetings are held with all Primary School teaching staff involved in moderation of different year groups work. Opportunities are sought to moderate with colleagues from other schools, wherever possible, in order to validate our judgements.

Links with parents

We regard the school/parent relationship as important in the educational progress of our students. Parents are encouraged to approach staff with any queries, view a child's recent classroom achievements through visits to the class and during parent consultations. We also hold year group support sessions for parents, to enable them to help their children at home with mathematics.

From Reception to Year 6, students are expected to practise their number recognition, basic number facts and times tables. To support these skills, The Gildredge Glitter Ball competition encourages the children to regularly practise fluency, at school and at home, through a fun and engaging challenge. The children are encouraged to beat their own personal best each week.

Professional Development

As a staff, we seek to ensure that our knowledge base is regularly updated by seeking appropriate training and offering support for colleagues through discussion and observation. We have chosen to have Maths Subject Leads across the different phases of the Primary school; they meet regularly so that they have a good understanding of what Maths looks like in the different phases. The Maths Subject Leaders are Kate Paul, Sheri Wilkinson, Laura Rummins and Jasmin Stoakley. The Maths Subject Leaders are responsible for raising standards of teaching and learning in Maths. They will analyse data each year to pick out strengths and identify areas for improvement. From this analysis, the Maths School Development Plans will be born with a key issue to be driven through school. This Key Issue will be implemented, monitored and the impact evaluated at regular points using some of the following monitoring strategies:

- Auditing staff, in order to plan CPD opportunities;
- Moderation of pupil work;
- Monitoring Maths planning, where appropriate;
- Attending Maths CPD and disseminating information to staff
- Lesson observations;
- Learning Walks;
- Discussion with pupils;
- Keeping up to date with important English developments;
- Purchasing new resources;
- Leading staff meetings and training of staff;
- Data analysis

Governors

The Primary Head will report to Governors at termly Education Committee meetings, on the progress of all students.