HALLATON C OF E PRIMARY SCHOOL

Maths Policy

Our Vision

Through a positive caring environment, we provide the opportunity for every child to reach their full potential. We embrace Christian values and ensure all children are ready for their next steps.

Rationale

Mathematics equips pupils with a uniquely powerful set of tools to understand and change the world. These tools include logical reasoning, problem solving skills and the ability to think in abstract ways.

Mathematics is integral to all aspects of life, critical to science, technology and engineering, and necessary for financial literacy and most forms of employment; with this in mind, we endeavour to ensure that children develop a positive and enthusiastic attitude towards mathematics that will stay with them, 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

We aim for all pupils to:

- Become **fluent** in the fundamentals of mathematics, so that they develop conceptual understanding and the ability to recall and apply knowledge rapidly and accurately. including the varied and regular practice of increasingly complex problems over time.
- **Reason mathematically** by following a line of enquiry and develop and present a justification, argument or proof using mathematical language.
- **Solve problems** by applying their mathematics to a variety of problems with increasing sophistication, including breaking down problems into a series of simpler steps and persevering in seeking solutions – including unfamiliar contexts and real-life scenarios.
- Make **rich connections** across mathematical ideas to develop fluency, mathematical reasoning and competence in solving increasingly sophisticated problems.

Curriculum Intent

The National Curriculum order for mathematics describes in detail what pupils must learn in each year group. Combined with the White Rose Calculation Policy and Progression Document this ensures continuity and high expectations for attainment in mathematics. Through carefully sequenced 'small steps' we build on prior learning to ensure all can access the new learning.

It is vital that a positive attitude towards mathematics is encouraged amongst all our pupils. At Hallaton we use the White Rose Scheme as a basis of our mathematics programme. We are committed to ensuring that all pupils achieve mastery in the key concepts of mathematics, appropriate for their age group, in order that they make genuine progress and avoid gaps in their understanding that creates barriers to learning as they move through education.

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. The use of representations and models enable pupils to develop a deep knowledge of mathematics which they should also be able to apply to science and other subjects. Whole-class interactive teaching, assessment for learning, questioning, short tasks, explanation, demonstration, and discussion, enabling pupils to think, reason and apply their knowledge to solve problems. Mathematical learning behaviours are developed such that pupils focus and engage fully as learners who reason and seek to make connections.

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 rather than acceleration through new content. Those who are not sufficiently fluent with earlier material should consolidate their understanding, including through additional practice.

The use of precise mathematical language is essential to enable all pupils to communicate their reasoning and thinking effectively.

We aim to provide the pupils with a mathematics curriculum and high quality teaching to produce individuals who are numerate, creative, independent, inquisitive, enquiring and confident. We also aim to provide a stimulating environment and adequate resources so that pupils can develop their mathematical skills to the full.

Our pupils should:

- have a well-developed sense of the size of a number and where it fits into the number system
- know by heart number facts such as number bonds, multiplication tables, doubles and halves
- use what they know by heart to figure out numbers mentally – key number facts are learnt to automaticity so that pupils are able to focus on new learning
- calculate accurately and efficiently, both mentally and with written methods
- draw on a range of calculation strategies
- recognise when it is appropriate to use a calculator and be able to do so effectively

- make sense of number problems, including non-routine/'real' problems and identify the operations needed to solve them
- explain their methods and reasoning, using correct mathematical terms and vocabulary
- judge whether their answers are reasonable and have strategies for checking them where necessary
- suggest suitable units for measuring and make sensible estimates of measurements
- explain and make predictions from the numbers in graphs, diagrams, charts and tables
- develop spatial awareness and an understanding of the properties of 2D and 3D shapes

Curriculum Implementation

At Hallaton Primary, children study mathematics daily covering a broad and balanced mathematical curriculum including elements of number, calculation, geometry, measures and statistics. Alongside daily maths sessions, additional time is spent in KS2 focusing on multiplication and division knowledge to build fluency which will help children with the multiplication check in Year 4. Due to the interconnected nature of mathematics, at Hallaton Primary we aim to teach maths in a cross curricular manner as well as discretely to teach the practical application of mathematical skills.

Mathematics contributes to many subjects and it is important the children are given opportunities to apply and use Mathematics in real contexts. It is important that time is found in other subjects for pupils to develop their mathematical Skills, e.g. there should be regular, carefully planned opportunities for measuring in science and technology, for the consideration of properties of shape and geometric patterns in technology and art, and for the collection and presentation of data in history and geography.

We focus not only on mathematical methods but also on mathematical vocabulary and use Maths Mastery to broaden and deepen mathematical understanding.

We aim for each child to be confident in each yearly objective and develop their ability to use this knowledge to develop a greater depth understanding to solve varied fluency problems as well as problem solving and reasoning questions. We use a range of online resources throughout the school to ensure a curriculum that is specific to each child's learning needs.

EYFS

In Early Years, Mathematics involves providing children with opportunities to develop and improve their skills in counting, understanding and using numbers, calculating simple addition and subtraction problems; and to describe shapes, spaces, and measure.
Pupils are taught:

Number:

- count reliably with numbers from 1 to 20

- place them in order and say which number is one more or one less than a given number
- add and subtract two single-digit numbers and count on or back to find the answer using quantities and objects
- solve problems, including doubling, halving and sharing

Shape, space and measure:

- use everyday language to talk about size, weight, capacity, position, distance, time and money to compare quantities and objects and to solve problems
- recognise, create and describe patterns
- explore characteristics of everyday objects and shapes
- use mathematical language to describe them.

Key Stage 1

The National Curriculum (2014) states that:

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 should involve working with numerals, words and the four operations, including with practical resources [for example, concrete objects and measuring tools].

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 National Curriculum (2014) states that:

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 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 National Curriculum (2014) states that:

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 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.

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.

Ways of Working

Pupils are provided with a variety of opportunities to develop and extend their Mathematical skills, including:

- Group work
- Paired work
- Whole-class teaching
- Individual work

Pupils engage in:

- the development of mental strategies
- written methods
- practical work
- investigational work
- problem solving
- mathematical discussion
- consolidation of basic skills and number facts
- maths games

We recognise the importance of establishing a secure foundation in mental calculation and recall of number facts before standard written methods are introduced. We use accurate mathematical vocabulary in our teaching and children are expected to use it in their verbal and written explanations.

At Hallaton, we believe that if firm foundations are established in key mathematical concepts then children are able to develop a deeper and more cohesive understanding of complex mathematics as they grow.

Teaching Approaches

Teachers use a range of teaching strategies to engage the children in maths and ensure progress is made by all children within a class; no set formula is used.

Sometimes the focus for the session is new learning, at other times pupils may be practising, to master the application of a concept they have learned earlier. The focus of the session may vary for different children depending on their learning needs.

At times there may be opportunities to develop skills and understanding of mathematics through additional activities, some of which may take place at home.

Curriculum Impact

Throughout each lesson formative assessment takes place and feedback is given to the children through marking against the learning objective, highlighting it to say if the children are secure or not in the concepts. Teachers record the highlighted colour (green = secure, yellow = almost secure, pink / red = not secure) on a whole class feedback sheet and make any notes of misconceptions or further teaching. Teachers use this assessment to influence their planning and ensure they are providing a mathematics curriculum that will allow each child to progress. The teaching of maths is also monitored through book scrutiny, learning walks and lesson observations.

Each term children from Year 1 and above complete a summative assessment to help them to develop their testing approach and demonstrate their understanding of the topics covered. Both Key Stages use a combination of White Rose tests and previous SATs papers (Year 2 & 6). The results from both formative and summative assessment are then used to determine children's progress and attainment.

Resources

A bank of essential mathematics resources is kept in the Rectory. White Rose workbooks are used as well as maths books for other maths work including investigations. Key Stage 2 children have access to Times Table Rockstars and have time during the school week to use this tool to improve their times table knowledge.

Role of the Subject Leader

- Ensures teachers understand the requirements of the National Curriculum and helps them to plan lessons.
- Leads by example by setting high standards in their own teaching.
- Prepares, organises and leads CPD and joint professional development.
- Works with the SEND Co-coordinator.
- Observes colleagues from time to time with a view to identifying the support they need.
- Attends CPD provided
- Keeps parents informed about Mathematics issues
- Discusses regularly with the Headteacher and the mathematics governor the progress of implementing National Curriculum for Mathematics in school
- Deploys support staff to address mathematics related needs within the school.
- Monitors and evaluates mathematics provision in the school by conducting regular work scrutiny, learning walks and assessment data analysis.

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By: Karen Franklin Subject Lead
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