Maths Policy

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Recommended associated documents:

Calculation Policy

THE NATURE OF MATHEMATICS

"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 New national curriculum in England framework document, July 2013)

Mathematics is a tool for everyday life. It is a whole network of concepts and relationships which provide a way of viewing and making sense of the world. It is used to analyse and communicate information and ideas and to tackle a range of practical tasks and real life problems. It also provides the materials and means for creating new imaginative worlds to explore.

Using the Programmes of Study from the New National Curriculum we aim to develop

- An enjoyment and curiosity of mathematics and for children to feel confident to become successful;
- Children's abilities to use and apply mathematics to solve problems in both the classroom and in 'real life' contexts;
- A confidence to communicate ideas in written form and orally;
- Independent and collaborative ways of working, encouraging children to share ideas and solve problems together;
- A wide range of mathematical vocabulary to be modelled and used in the classroom environment;
- The children's ability to recall mental facts accurately and quickly and using effective written calculation methods;
- Children's logical thinking, reasoning and ability to problem solve as transferable life skills.

NEW CURRICULUM OUTLINE FOR EACH KEY STAGE

Foundation Stage

Pupils are encouraged to develop their Problem Solving, Reasoning and Numeracy in a broad range of contexts in which they can explore, learn, enjoy, practise, discuss and extend their skills. Pupils are encouraged to exploit their mathematical potential in both indoor and outdoor enabling environments. They are provided with a wide range of activities that promote regular active participation, exploration of real life problems, development of imaginative play and early experience of mathematical language, including an introduction to Mathematics Makes Sense (MMS) in the summer term. All pupils are supported positively and encouraged to gain confidence and competence in their skills.

By the end of the Foundation Stage pupils should be able to 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, using quantities and objects, add and subtract two single-digit numbers and count on or back to find the answer. Solve problems, including doubling, halving and sharing. The children should be able to 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.

Key Stage 1

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 (e.g. concrete objects).

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 – Years 3-4

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. Children will be tested on their times tables in Year 6 using an online screening process.
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 – Years 5-6

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.

SCHOOL POLICY AND THE NATIONAL CURRICULUM

At Gorsemoor Primary School, we use a wide variety of resources to guide our planning to ensure that all parts of the New National Curriculum Programme of Study are being taught. These include Mathematics Makes Sense and Abacus.

Our aim is to continually strive to raise standards of attainment at Gorsemoor through staffs high expectations and high aspirations for pupils. We hope to foster an enjoyment of mathematics and for children to develop their knowledge in order to be confident when faced with mathematical challenges in real life contexts.

Breadth of Study

Through careful planning and preparation we aim to ensure that throughout the school children are given opportunities for:

- Practical activities and mathematical games;
- Problem solving;
- Individual, group and whole class discussions and activities;
- Open and closed investigations;
- A range of methods of calculating eg. mental, pencil and paper.
- Using a range of ICT devices as mathematical tools.

Teaching and Learning

All pupils are entitled to a broad mathematics curriculum in which their learning needs are identified and met. Pupils should experience a range of practical and written activities on number, measurement, geometry and statistics. Classrooms should be rich in discussion between pupils and between teacher and pupils. Some facts will need to be memorised, others will need to be practised but underpinning all of this will be the development of mathematical reasoning and understanding through exploration, problem solving and investigation.

Mathematics is taught for 1 hour per day in KS1 and KS2. However, in the Foundation classes mathematics teaching is spread throughout the day. The pupils in each year group in KS1 and KS2 are taught in attainment sets and are provided with differentiated activities to ensure tasks are set according to their individual needs.

The approach to the teaching of mathematics within school is based on the following principles:

- A mathematics lesson every day;
- A clear focus on direct, instructional teaching and interactive oral work with the whole class and group;
- An emphasis on mental skills and securing times tables;
- An emphasis on written standard calculations.

In addition, each lesson has the following structure:

- A short mental/oral starter
- The main teaching
- Opportunities to apply new learning through differentiated activities.
- Plenary

Pupils in the Foundation stage use a variety of media but most of the work is practical. All pupils in KS1 and KS2 use a pencil for mathematical calculations and squared exercise books to aid setting out of calculations.

Mental Maths

Tests should be conducted as appropriate throughout the term and recorded on sheets made into booklets. Although Year 6 children do not have to take a specified mental maths paper, they still have to access tests that require quick thinking answers in a given time. MMS daily practices are also a brilliant tool to support mental strategies regularly within the mathematics lesson or during morning/afternoon sessions.

Teaching Resources

There are a wide range of resources available to support the teaching of Mathematics at Gorsemoor. These resources have been disseminated to individual year groups but remain for the use of all classes/year groups.

- CGP books
- Delbert books in Years 5 and 6
- Topical Resources (Staff area > Maths)
- Mathsphere (Staff area > Maths)
- Testbase

These are to provide teachers with a range of activities to support the teaching and learning of Mathematics in both Key Stages and should be 'dipped into' as and when needed.

ICT

The role of technology in the our mathematics curriculum is to motivate and engage children and support children in analysing and communicating. At Gorsemoor we have an extensive range of ICT programs to support mathematics teaching, these include:

- Easi-teach
- Active Inspire
- Education City

- Espresso
- Easi-Maths
- Primary Maths Games
- Interactive Teaching Programs (ITPs)
- Gordon's Games
- And many more …

* Calculators should be used throughout the school to promote play, exploration and fun with number. They may also be used at the teacher's discretion for children to check their own work.

Use of exercise books

Pupils in Years 1 and 2 use a mathematics exercise book (9 x 8) 1cm squared book. Pupils in Years 3, 4, 5 and 6 use 7mm squared books. Pupils are taught suitable setting out of work. On starting new work pupils in KS2 and either pupils or teachers in KS1 rule off the last piece of work and date the next piece. The date is recorded in figures e.g. 23.11.15. In KS2 the use of Roman Numerals for the short date is also encouraged. Left and right hand margins are used in KS1 and KS2. All completed mathematics work should have a traffic-light or learning conversation (LC) to indicate success by the child to meet the learning target (Walt).

Assessment

At Gorsemoor Primary School we recognise that assessment for learning lies at the heart of promoting learning and raising standards of attainment.

The formative assessment procedures within our school consist of:

- Making ongoing assessments through questioning, discussion and observations (these 'immediate' responses are mainly verbal and may not always be recorded).
- Fast feedback in books is in response to the achievement of the learning target or to correct any difficulties encountered.
- Self-assessment using the system of traffic lights, smiley faces and learning conversations.
- Use of a teacher's own test or activity designed to check understanding.

The summative assessment procedures consist of:

- A half termly teacher assessment (to identify 'stuck' children). PUMA
- Use of SATs and optional SATs papers in Years 5 and 6
- Teacher assessment linked to the Learning Ladders.

Special Educational Needs

Where necessary, children's PEPs incorporate suitable objectives and teachers keep these in mind when planning work. PEPs are shared with parents and children and reviewed in October, March and June.
Children with SEN are taught within the daily mathematics lesson and are encouraged to take an active part. Children who are taught in the lower and middle attaining groups have the support of a teaching assistant in most lessons. They work collaboratively with the class teacher to discuss planning and resources prior to each lesson.

In addition to supporting the lower attaining groups, teachers ensure that they are providing appropriate challenges for the higher attainers. Gifted and talented children are identified and monitored closely. The school's tracking system allows close monitoring of pupils' progress to ensure that all pupils are offered the support they need.

Some children are offered assistance in reading (if their reading age is significantly lower than their chronological age) to prevent that from becoming a barrier to learning in mathematics.

Calculations Policy

Gorsemoor has a written calculation policy that was reviewed in December 2015. Agreed methods have been recorded for each year/phase which will be reviewed and developed regularly. For children to have a secure understanding and confidence in written methods, they must be taught systematically and consistently throughout the school.