

Mathematics Policy

General Aims:

- To enable pupils to be proficient, competent and confident in all areas of this subject, and to have the ability to apply these skills in a variety of contexts.
- To foster positive attitudes towards mathematics by developing pupil confidence, independence, persistence and co-operation.

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.

Organisation and Delivery:

We promote the daily teaching of Mathematics alongside the effective application of skills across other subject areas. Teachers use their professional judgement to determine the activities, timing and organisation of lessons to suit the objectives and to ensure continuity, progression and full coverage of the National Curriculum, and EYFS, programmes of study.

Our approach to teaching mathematics is based on:

- developing pupils' understanding of number and place value
- developing pupils' conceptual understanding of calculation.
- models, images and resources being used throughout the learning journey.
- pupils being encouraged to develop independence and to select and use resources to support their learning.
- practical activities being a regular feature of mathematics lessons.
- offering appropriate levels of challenge to meet the needs of all pupils.
- solving problems being integral to the maths curriculum.
- taking risks, making mistakes, and learning from these experiences.
- exploring misconceptions in order to deepen understanding.

In summary

Mathematics teaching should:

- Provide children with a balance of exploration, acquisition, consolidation and application.
- Build in frequent short and sharp periods of practice and consolidation
- Engage with children's thinking
- Demonstrate the correct use of mathematical vocabulary, language and symbols, models, images, diagrams and practical equipment as tools to support and extend thinking.
- Give well directed opportunities for children to use and apply their learning.
- Encourage children to evaluate solutions and analyse methods.
- Model with children how to identify their learning skills, and manage and review their own learning.

School Curriculum - Programmes of Study

Foundation Stage

The programme of study for the Foundation stage are set out in the Development Matters in the Early Years Foundation Stage (EYFS). 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 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 National Curriculum (2014).

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 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 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 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.

Approach to Calculation:

Mental Mathematics

Mental methods will be emphasised from an early age. Children will be directly taught and provided with regular opportunities to develop the different skills involved. These skills include:

- Remembering number facts
- Using known facts to work out new ones
- Developing a repertoire of mental strategies
- Solving problems

Written Work

Written recordings will be used to:

- Informally support a mental calculation
- Develop the skill of explaining a method used
- Help someone else follow the method or assess the work
- Practise writing and using the correct symbols and notation
- Help practise the recall of number facts
- Carry out the working of a standard written method of calculation

Progression in Written Calculation

The written calculation policy has been reviewed in light of the new National Curriculum.

Please see the attached documents showing the progression in written calculation strategies for addition, subtraction, multiplication and division. Please note the examples indicate end of year expectations. Teachers will use lots of practical and investigative approaches to develop secure understanding of the strategies across the year.

The role of calculators.

Calculators are recognised as an effective teaching and learning resource to support pupils' conceptual understanding and exploration of more complex number problems. Children will be directly taught the technical skills, vocabulary and decision making necessary for their effective use. Calculators should not be used as a substitute for good written and mental arithmetic.

Further information:

This policy should be read in conjunction with the following policies:

Teaching and Learning, Assessment, Marking, Homework, ICT, SEN, G&T, Equal Opportunities.

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