



Mathematics Policy

Reviewed: December 2021

Headteacher	Mrs L Brookes	Date	
Chair of Governors	Mr M Bogg	Date	

Next Review: 12/2023



***“Pure mathematicians just love to try unsolved problems — they love a challenge.”
— Andrew Wiles***



Aims and objectives

Mathematics teaches children how to make sense of the world around them through developing their ability to calculate reason and solve problems. It enables children to understand relationships and patterns in both number and space in their everyday lives. Through their growing knowledge and understanding, children learn to appreciate the contribution made by many cultures to the development and application of mathematics. A high-quality mathematics education, therefore, provides a foundation for understanding the world, the ability to reason mathematically and a sense of enjoyment and curiosity about the subject. Mathematics is a proficiency which involves confidence and competence with numbers and measures. It requires an understanding of the number system, a repertoire of computational skills and an ability to solve number problems in a variety of ways in which information is gathered by counting and measuring and is presented in graphs, diagrams, charts and tables.

We aim to develop lively, enquiring minds encouraging pupils to become self-motivated, confident and capable in order to solve problems that will become an integral part of their future, to promote enjoyment of learning through practical activity, exploration and discussion.

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
- can **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.

Outcomes

In Mathematics education at Abbey Hulton Primary School we aim to sustain and develop in all children:

- confidence, understanding and enjoyment in mathematics
- awareness of relationship and pattern, and how these can bring about a clearer understanding of a situation
- an appreciation of mathematics as a means of communication through which they can analyse information and ideas
- the ability to work systematically where the task requires a careful accurate approach, as well as the ability to show imagination, initiative and flexibility when appropriate
- independence of thought and action as well as the ability to cooperate within a group
- problem solving skills and strategies
- the ability to use mathematics effectively as a tool in a wide variety of situations
- sensible use of factual recall, mental and written methods,

School Curriculum - Programme of Study

Foundation Stage

The programme of study for the Foundation stage is set out in the EYFS Framework 2014. 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 new National Curriculum (2014). The programmes of study are organised in a distinct sequence and structured into separate domains. Pupils should make connections across mathematical ideas to develop fluency, mathematical reasoning and competence in solving increasingly sophisticated problems. By the end of each key stage, pupils are expected to know, apply and understand the matters, skills and processes specified in the relevant programme of study

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). These resources are available in each class.

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.

Mathematics and inclusion

At our school we teach mathematics to all children, whatever their ability and individual needs. Mathematics forms part of the school curriculum policy to provide a broad and balanced education to all children. Through our mathematics teaching, which focuses on a mastery approach, we provide learning opportunities that enable all pupils to make good progress with appropriate scaffolds. We strive hard to meet the needs of those pupils with special educational needs, those with disabilities, those with special gifts and talents and those learning English as an additional language, and we take all reasonable steps to achieve this.

When progress falls significantly outside the expected range, the child may have special educational needs. Our assessment process looks at a range of factors – classroom organisation, teaching materials, teaching styles, and differentiation – so that we can take some additional or different action to enable the child to learn more effectively. Assessment against the National Curriculum allows us to consider each child's attainment and progress against expected levels. This ensures that our teaching is matched to the child's needs. Intervention through School Action and School Action Plus will lead to the creation of an Individual Education Plan (IEP) for children with special educational needs. The IEP may include, as appropriate, specific targets relating to mathematics. They will then be supported appropriately.

Teaching and Learning

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

- A mathematics lesson every day
- A clear focus on direct, instructional teaching and interactive oral work with both the whole class and smaller ability groups.

The curriculum is mainly delivered by class teachers. Following a mastery approach, work is scaffolded to enable all children to achieve and move along together. Planning is based upon the National Curriculum (2014) and when planning the sequence of lessons teachers follow to White Rose long term plans to enable a solid progression of skills across the year. Programmes of Study should inform medium term plans and subsequently weekly planning. Class teachers are responsible for the relevant provision of their own classes and individually develop weekly plans which give details

of learning objectives and appropriate differentiated activities and scaffolds where necessary.

Due to the Coronavirus, (COVID 19) pandemic and the impact this has had on children's progress and learning during 'lockdown' and partial school closure, there have been some changes made to address the need for a 'recovery curriculum' of which mathematics has been identified as a crucial subject for consideration.

Staff were given training in a PDM to assist them with their ongoing planning of a 'recovery curriculum' for mathematics focusing upon the non-statutory Guidance for Key Stages 1 and 2 published by the DFE in June 2020 as well as other recommendations set out by the Local Education Authority.

The publication 'identifies the most important conceptual knowledge and understanding that pupils need as they progress from year 1 to year 6. These important concepts are referred to as ready-to-progress criteria (RTP criteria) and provide a coherent, linked framework to support pupils' mastery of the primary mathematics curriculum.'

Teachers will make informal, formative assessments of the pupils in their classes at the very beginning of the Autumn Term to identify any 'gaps' or 'rusty' areas of knowledge and understanding in the 6 key areas as set out by this non-statutory guidance as appose to following a set catch up curriculum. These ready-to-progress criteria for all year groups are provided at the end of the introduction in the document. (Ready-to-progress criteria), and each criterion is explained within the corresponding year-group chapter so teachers will have a good understanding of the 'starting points' for their children. In most cases it is anticipated that children will need to revisit some mathematics objectives from their previous year group to ensure that they have achieved mastery of these key areas before moving forward successfully onto the next stage of their learning in the subject. These objectives will be identified within their weekly planning. Through using White Rose Maths long term planning some of these areas have been identified for staff to use if needed.

The six areas of priority include:

- Number and Place Value
- Number facts
- Addition and Subtraction
- Multiplication and division
- Fractions

Teachers and practitioners in the Early Years will continue to follow The Early Years Foundation Stage curriculum while adopting the same philosophy and approach in their assessments and teaching during this 'different year.' Children will be taught to meet their needs and varying stages of development which will be 'driven by' ongoing assessment in a range of contexts.

Marking

Where possible marking should be done alongside a child. Where this is not possible a consistent approach needs to be used. Even if work is not marked with the child, oral feedback should be given where possible. Where possible teachers will show children an example of how to correct and error and children will have time to go back and look at their work a second time.

Aims and objectives

- To improve motivation and self esteem
- To correct and assess work

- To provide the opportunity for pupils self evaluation
- To reflect, extend and challenge
- To involve pupils and teachers in working towards and monitoring pupils targets
- To raise standards of presentation
- To inform future planning

Teaching staff mark pupils work using a coloured system, with which the pupils are familiar;

- Green / stamp– work is correct and positive praise is being given
- Pink – work shows an error and explanation of how to correct it

Pupils' self assessment in mathematics

KS1 and 2 - Pupils self assess by circling the relevant smiley face on a piece of work.

Resources

All classrooms have a range of appropriate apparatus. These resources are frequently audited and updated and staff complete request forms where new resources are needed. There is a central area, resource room, where some resources are grouped and labelled.

Monitoring and review

The coordination and planning of the mathematics curriculum are the responsibility of the subject leader who also supports colleagues in their teaching, by keeping informed about current developments in mathematics, attending appropriate training and keeping up to date with new research and by providing a strategic lead and direction for this subject; uses specially allocated regular management time to review evidence of pupil's work.

The quality of teaching and learning in mathematics is monitored and evaluated by the head teacher & the maths leader as part of the school's agreed cycle of monitoring and evaluation.

This policy will be reviewed every two years or sooner if necessary.