

# Mathematics Policy



<b>Review Date</b>	September 2021
<b>Review Frequency</b>	Annually
<b>Date for Next Review</b>	September 2022
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## Rationale

This is a revised policy document, resulting from a review of the policy dated March 2019. It is a statement of the aims, principles and strategies for the teaching and learning of mathematics at Whale Hill Primary School.

## Introduction

*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 National Curriculum 2014, mathematics is:

- An enjoyment and curiosity of maths and for children to feel confident to become successful;
- Children's abilities to use and apply maths 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.

## Values

Our curriculum is the means by which we achieve our objectives of educating children in the knowledge, skills and understanding that they need in order to lead fulfilling lives. Our school curriculum is underpinned by our principle value of providing high quality educational experiences that are focussed on **continued improvement towards the best imaginable** in whole school standards and the development of independent and responsible learners. We have consistently high expectations of pupils in terms of both the content and presentation of their work which fosters a culture of diligence, aspiration and pride amongst our learners. Our curriculum includes transferable knowledge and builds deeper understanding/capacity for skilful performance.

## Intent

Mathematical skills and knowledge should be delivered, explored and revisited through conscious decision making and awareness of learning and progress needs and abilities. Children should develop resilience and self-confidence in applying their learning skills. The collaboration between peers, and the relationship between learners and their class teacher should drive the learning and inform the content, strategies and real-world contextualisation to maximise on the progress and learning opportunities.

Whale Hill Primary is now teaching the 2014 National Curriculum Programmes of Study in each year group as a basis for its curriculum and is adopting a 'Mastery approach' as outlined in the National Centre for Excellence in the teaching of mathematics. Teachers are reinforcing an expectation that all pupils are capable of achieving high standards in mathematics and teaching is underpinned by methodical curriculum design and supported by carefully crafted lessons and resources to foster deep conceptual and procedural knowledge. The school is teaching through the new distinct domains and will ensure all children make rich connections across the mathematical ideas to develop fluency, mathematical reasoning and competence in solving increasingly sophisticated problems. We also strive to enable each child to apply their mathematical knowledge to science and other subjects. Mathematical competencies are introduced early as is the rote learning of times tables as these are seen as procedural tools to quicken problem solving at a later stage. This complements the rigorous approach to mental fluency arithmetic throughout the school. Fluency comes from deep knowledge and practice. (Please refer to Fluency progression document.)

## Implementation

A 'mastery' approach has been adapted and implemented at Whale Hill Primary School for the planning, delivery and engagement of mathematics. We have therefore used the White Rose Maths Scheme of Work to timetable mathematical units that are explored progressively, drawing on resources, data and suggestions from reliable sources such as NCETM and nrich.co.uk to link mathematical talk and knowledge across the various units.

When planning for objective coverage, teachers are expected to take the following mastery strategies into account:

- Small steps.
- Ping pong style of delivery.
- Implementing the Concrete, Pictorial and Abstract (CPA) approach to introducing, exploring and applying mathematical concepts.
- Applying/using the Bar Model approach as a strategy to approach calculation/problems.
- Considering key questions and mathematical vocabulary at the point of unit planning.
- Multiple opportunities for verbal and written/drawn reasoning (explaining and using mathematical vocabulary to explain methods or reasoning) within unit exploration.
- Inclusion of relevant problem-solving opportunities, where children are expected to draw on and apply multiple concepts to address or approach a challenge.
- Modelling of all skills and approaches.
- Modelling and sharing of efficient and accurate application of methods.

- Opportunities to explore maths concepts/objectives at 'greater depth'.
- Opportunities for some children, through streamed groupings, to work through the year group content at a slower pace.
- Include all learners, providing relevant support for those with additional needs (educational, medical or otherwise).

## Organisation

### EYFS

Here at Whale Hill Primary school we recognise the importance of building a foundation for igniting children's curiosity and enthusiasm for learning, forming relationships and thriving.

The prime areas as outlined in the statutory EYFS framework are:

- communication and language
- physical development
- personal, social and emotional development

and these are strengthened in our approach to the teaching of mathematics in Nursery and Reception. Staff use guidance from the statutory framework, planning and resources from White Rose amongst other carefully selected resources to provide opportunities for continuous mathematics provision in the classroom and outdoor environment.

Mathematics is an integral part of both the indoor and outdoor learning environment in Nursery and Reception and provides rich opportunities for exploration and discussion.

In Nursery, evidence is mainly collected using the seesaw app however some activities may be recorded in a child's learning journey book.

In Reception, Mathematics evidence is collected using the Seesaw app and when applicable in specific maths books.

### 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).

Staff follow the long term plans as outlined in the White Rose programmes of study. Staff are encouraged to move through the content of these units at a pace that is led by the children's needs and not stick rigidly to suggested timeframes. Staff compliment White Rose resources with carefully selected resources from NCETM, NRICH, Master the Curriculum, Classroom secrets, Primary Stars and other relevant publications. Staff are encouraged to carefully select resources to meet the needs of their learners and to encourage both procedural and conceptual variation. Lessons are then carefully crafted, designed and structured to develop the necessary small conceptual steps for mastery. In Year

1 and Year 2 mathematics can be seen around the classroom and on designated working walls. Children work in maths books and on whiteboards with practical work shared via the Seesaw app.

### **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.

Staff follow the long term plans as outlined in the White Rose programmes of study. Staff are encouraged to move through the content of these units at a pace that is led by the children's needs and not stick rigidly to suggested timeframes. Staff compliment White Rose resources with carefully selected resources from NCETM, NRICH, Master the Curriculum, Classroom secrets, Primary Stars and other relevant publications. Staff are encouraged to carefully select resources to meet the needs of their learners and to encourage both procedural and conceptual variation. Lessons are then carefully designed and structured to develop the necessary small conceptual steps for mastery.

In Years 3 and 4 children work in designated maths books (daily maths books, main maths books and Schofield and Sims workbooks) and on whiteboards. Where appropriate, practical work will be recorded using the seesaw app.

### **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. Staff follow the long term plans as outlined in the White Rose programmes of study. Staff are encouraged to move through the content of these units at a pace that is led by the children's needs and not stick rigidly to suggested timeframes. Staff compliment White Rose resources with carefully selected resources from NCETM, NRICH, Master the Curriculum, Classroom secrets, Primary Stars and other relevant publications. Staff are encouraged to carefully select resources to meet the needs of their learners and to encourage both procedural and conceptual variation. Lessons are then carefully designed and structured to develop the necessary small conceptual steps for mastery. In Years 5 and 6 children work in designated maths books (daily maths books, main maths books and Schofield and Sims workbooks). Where appropriate, practical work will be recorded using the seesaw app.

## Impact

As a school, we use a range of formative and summative assessment to support our teacher assessments in all areas of the curriculum as we believe that all children need to make good progress in these skill areas across the curriculum in order to develop their true potential. Our assessment also helps to inform changes to any planning, content and delivery.

## Assessment

Reception: The Reception Baseline Assessment is a short, interactive and practical assessment of a child's early literacy, communication, language and mathematics skills when they begin school, using materials that most children entering Reception will be familiar with.

Years 1 – 6: As well as continuous formative assessments, children in Years 1-6 will complete NFER end of term tests which will be used alongside formative assessments to monitor progress and attainment.

### Year 2

End of Key Stage 1 SATs will no longer be administered.

### Year 4

The multiplication tables check (MTC) is statutory for primary schools in the 2021/22 academic year. Guidance is scheduled to be updated in March 2022.

### Year 6

The key stage 2 tests are timetabled from Monday 9 May to Thursday 12 May 2022.

## Pupil voice

It is extremely important to us that pupils get the opportunity to share their thoughts and ideas about mathematics at Whale Hill Primary School. This is done regularly in an informal manner. However, we also do this formally through Pupil Voice, where pupils of all abilities and backgrounds discuss a range of topics relating to school life. These are fed back to teachers and the School Council dissect them, taking action on any targets and suggestions that may have arisen.

## Monitoring and reviewing by Subject leaders and SLT

- Leaders have a clear and ambitious vision for providing high-quality, inclusive education and training to all. This is realised through strong, shared values, policies, and practice.
- Leaders focus on improving staff's subject, pedagogical, and pedagogical content knowledge to enhance the teaching of the curriculum and the appropriate use of assessment. The practice and subject knowledge of staff are built up and improve over time.
- Leaders engage with their staff and are aware and take account of the main pressures on them. They are realistic and constructive in the way that they manage staff, including their workload.
- Subject leaders are encouraged to dip in and out of classrooms as often as possible and in an informal manner to get a grasp on how their subject is being implemented across school.
- Observations of teaching, planning and work scrutiny take place over the course of the year in order to maintain and continue to raise standards.

## Special educational needs

Here at Whale Hill Primary School we are an open, supportive and professional team who are committed to ensuring that every child succeeds. We all aim to create a positive atmosphere of trust, mutual respect and high expectations between pupils, staff, parents/carers and other professionals. We have high academic/vocational and technical ambition for all pupils and our SEND children will not be offered a reduced curriculum. We are determined to ensure that we provide a happy, safe and calm environment where children behave well and develop into confident, creative and independent learners.

Please refer to our SEN Policy 2020 for further information.

## Marking and feedback

The purpose of marking should be to provide constructive feedback to every child, focussing on success and improvement against learning objectives. Marking should help children to become reflective learners, inspire them to perform and build confidence by celebrating achievement. Teachers and year groups should follow guidelines in the marking and feedback policy.

Marking will depend on the task set, but here are some points to consider:

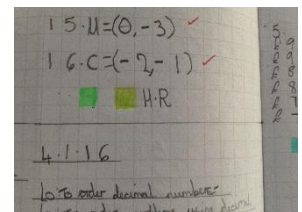
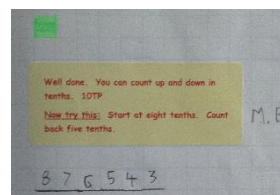
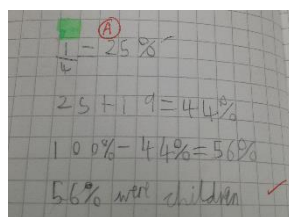
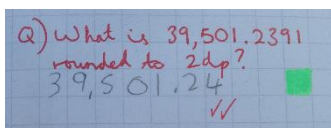
Pupils can correct, consolidate, extend and reason when they have been practising skills. Marking codes can be used to denote tasks on the IWB. For example:

A – Complete extension/greater depth question.




B – Complete consolidation question

C – Complete corrections.

Marking codes may vary from class to class, but the pupils should be familiar with them. If teachers prefer to write (fig. 1) or stick (fig. 2) questions, statements or comments into pupils' books, this is fine.



Teachers can highlight a square in maths books to denote whether the pupil has achieved the objective:

-  You have achieved your objective.
-  You will achieve your objective with a little more practice.
-  You need intervention to help you achieve this objective.

## Mental Maths

Children in KS2 complete at least fifteen minutes of Mental Maths each morning. Schofield and Sims Mental Arithmetic is a highly differentiated, progressive series of books, proven to raise children's attainment. The series is based on ability (rather than age cohorts) so that books can be matched to the needs of every child. Each book uses the same method of practising the 4 basic number operations (to keep skills sharp) and challenging children to do more complex one- and multi-step problems involving logical thinking and application of knowledge previously introduced. Children work through a series of questions each morning and each Friday take part in a mental maths marking session. This provides a valuable opportunity to assess children's understanding of different mathematical concepts. Both staff and children thoroughly enjoy these sessions and the children particularly enjoy modelling their methods and explaining how they have calculated their answers. For those children who are not ready to start Introductory book and children in Year 2, an alternative 'morning maths' is provided by the class teacher based on the appropriate needs of the children. Please see 'Fluency progression document' for more information on these objectives.

## Homework

At Whale Hill Primary School we are proud users of Times Tables Rockstars. Children enjoy using this app at home which improves their fluency with both multiplication and division. Children are encouraged to play weekly through tournaments and competitions in Years 2-6. In EYFS and Year 1, children are provided with accounts for the NUMBOTS app which helps promote key subitising skills and fluency of addition and subtraction. Challenges may be sent home by individual class teachers but are not mandatory.

## Parental engagement

Due to the unprecedented times endured due to COVID, parental engagement at Whale Hill Primary School has looked slightly different in the previous year. Welcome meetings for parents take place either by Zoom or in person and outline the key values of the school and also provide outlines of the Mathematics curriculum for each year group. During these welcome meetings, parents will be shown what Mathematics looks like at Whale Hill Primary School and how parents can support their children with these objectives at home. They are also given the opportunity to ask questions to further their knowledge and understanding of the mathematics curriculum at Whale Hill Primary School.

It is our hope to continue our popular maths workshops with parents in EYFS and Key Stage 1 this year, depending on Government guidelines.

We use social media to promote the achievement of mathematics and encourage parents to engage with Times Tables Rockstars and Numbots via these platforms where we also offer technical support for their use.

Parents are invited to discuss their child's progress and attainment twice a year at parents' evenings where their child's individual targets and achievements for mathematics are shared. Parents receive two written reports per academic year updating them on their child's progress and attainment in mathematics.



In addition to this document, please also refer to:

Calculation Policies for addition and subtraction, multiplication and division. Updated by the White Rose in 2021

Fluency skills progression document 2021

