

HARRINGTON HILL PRIMARY SCHOOL

MATHS POLICY



REVIEWED:

February 2023

NEXT REVIEW DATE:

February 2027

Striving for Excellence. Achieving Together.

Striving for excellence. Inspiring to achieve collaboratively through respect, happiness and creativity. We are independent and reflective for continuous improvement.

Purpose of the policy

This policy seeks to ensure a shared understanding throughout the school community of the aims, principles and strategies of learning, teaching, assessment and professional development in mathematics at Harrington Hill Primary School. The aims of this document are to outline how efficient provision of maths across the whole school is planned for and implemented.

Aims in maths teaching

- Establish a broad and balanced mathematical curriculum.
- Foster a positive and confident attitude to mathematics.
- Ensure continuity and progression throughout the school.
- Maintain an inclusive ethos.
- Employ effective differentiation strategies to support and extend all pupils.
- Encourage development of a range of visual, auditory and kinaesthetic learning styles.
- Develop pupil's own awareness of their achievements and the next steps in their learning.
- Engage pupils in dialogue to communicate their mathematical reasoning using appropriate vocabulary.
- Provide investigative opportunities for pupils to use and apply mathematics, to think logically and to solve problems in real-life and cross-curricular situations.
- Make mathematics interesting and exciting by linking maths to real life contexts.
- Ensure pupils have a repertoire of mental and written strategies and are able to select the most appropriate for a given calculation.
- Create a stimulating maths environment which supports pupils' mathematical learning.

Our School Vision

- Effectively planned, engaging lessons
- Embedding challenge at every level
- Vocabulary building and talk as a key feature of lessons
- Problem solving and mastery elements
- CPA approach (Concrete, pictorial, abstract)
- Child-led enquiry based, practical elements and real life contexts
- Cross-curricular approach
- Incentivised, linked through praise and rewards
- Fostering strong links with our community and parents

Structure of Maths Teaching

The Early Years Foundation Stage

Teachers ensure they follow the EYFS statutory framework and the Maths Mastery Programme, teaching maths through a mixture of discreet sessions, continuous provision and play.

Teachers ensure that pupils develop a strong grounding in number so that all children develop the necessary building blocks to excel mathematically. Children should be able to count confidently, as well as develop a deep understanding of: the numbers to 10, the relationships between them and the patterns within them. In addition, it is important that the curriculum includes rich opportunities for children to develop their spatial reasoning skills across all areas of mathematics including shape, space and measures.’ (Development Matters 2021)

Through their planning and practice, teachers, teaching assistants and nursery officers, follow the ‘Development Matters Guidance’, ensuring that they:

- Provide frequent and varied opportunities to build and apply their understanding – such as using manipulatives, including small pebbles and tens frames for organising counting. Children will develop a secure base of knowledge and vocabulary from which mastery of mathematics is built.
- Children develop positive attitudes and interests in mathematics, look for patterns and relationships, spot connections, ‘have a go’, talk to adults and peers about what they notice and should be encouraged to not be afraid to make mistakes.
- Give pupils sufficient time, space and encouragement to discover and use new words and mathematical ideas, concepts and language during child-initiated activities in their own play.
- Encourage pupils to explore real-life problems, to make patterns and to count and match together; for example ask, “How many spoons do we need for everyone in this group to have one?”
- Develop mathematical understanding through all pupils’ early experiences including through stories, songs, games and imaginative play.
- Recognise and exploit the mathematical potential of both the indoor and outdoor environments.
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- Provide a range of activities, some of which focus on mathematical learning and some which enable mathematical learning to be drawn out, for example, exploring shape, size and pattern during block play.
- Use mathematical terms during play and daily routines.

Mastery Approach

In all Key Stage 1 classes and some Key Stage 2, mathematics is taught for one hour each day and each lesson follows a 6 part structure:

1. Do now/ Fluency first – A short activity at the start of a lesson that pupils can engage with, usually without any input from the teacher. This can be something to prepare them for the material in the coming lesson or a more general activity to practise or develop fluency or keep key skills sharp.
2. New Learning – Teacher models using concrete manipulatives. Pupils are encouraged to answer in full sentences. Misconceptions are anticipated and incorporated.
3. Talk task/ Let's explore - Almost any task can be a 'talk task'. We always incorporate tasks into our lessons that provide pupils with opportunities to discuss the mathematics they are working on, so developing both their reasoning and mathematical communication skills.
4. Develop Learning – References are made to previously learnt models/ representations/ skills/ concepts. The Independent Learning task is modelled. Misconceptions are anticipated and incorporated.
5. Independent Task – Everyone is engaged in learning about the same mathematical concept or skill, with an appropriate amount of scaffolding. Extension tasks involve deeper understanding of the same mathematical concept or skill – through solving less routine problems, demonstrating using concrete manipulatives/ drawing diagrams, explaining in full sentences or asking their own questions.
6. Plenary - Provides opportunities to consolidate learning, address misconceptions and evaluate and extend understanding. Includes celebration of success and reaffirmation that success comes from effort.

Transitions – are a key part of Mastery Maths lessons. Children chant/sing as they move between the carpet and the tables e.g. skip counting, reciting times tables. Transitions take about 30 seconds or less and take place between each part of the 6 part structure.

Challenge for All

In some Key Stage 2 classes, mathematics is taught for one hour each day and is structured as followed:

1. Starter - At the beginning of every maths lesson, the children are given a green pen question, which is linked to the previous days learning. Or they will make green pen corrections, these will be targeted based on their understanding from the previous day.
2. New Learning - The main teaching session includes a balance of teacher modelling, independent and group work. The children will get a chance to explore mathematical concepts to develop skills in calculating and reasoning skills. Well-planned questioning will take place, which informs continuous teacher assessment. Partner talk is a key aspect.
3. Independent Task - The independent and teacher focus group sessions are appropriately differentiated and provide an opportunity for pupils to practise and apply knowledge, skills and understanding. Teacher focus groups provide an opportunity for the teachers and teaching assistants to match teaching more precisely to pupil's starting points and needs.
4. The plenary activities provide opportunities to consolidate learning, address misconceptions and evaluate and extend understanding. Includes celebration of success and reaffirmation that success comes from effort.

Planning

EYFS:

In the Foundation Stage, a weekly mathematics planning sheet is completed: it details the learning objectives and intentions. It is carefully differentiated, with key questions and focus areas from the Developing Early Years document.

Key Stage One and Two:

At Harrington Hill, we believe that it is about the process of planning rather than the paperwork. In Year's one-six, we use flipchart planning for each subject area. Flipchart plans must include:

- Clear learning intentions
- Details of activities
- Models for learning
- Key vocabulary
- Differentiation

- Use of additional adults
- Clear success criteria

Flipchart plans for each subject do not need to be in place at the start of each term. They can be completed on a weekly basis; however, they do need to be in place and uploaded by 9am Monday to the SharePoint.

Medium term plans are amended every half term in light of recent assessments in order to meet the needs of the children in each class.

Embedding challenge at every Level

At Harrington Hill, we believe that quality first teaching and high quality assessment for learning is essential to accelerate pupils' progress and raise attainment.

Using assessment for learning and quality first teaching, we plan for the individual needs of our children. We teach exciting maths concepts, which are designed so that everyone can succeed, using concrete resources and problem-solving challenges to deepen understanding. We ensure our lessons are child-led, practical and celebrate diversity in maths.

Our curriculum is carefully designed and organised to ensure that children fully master key concepts in a visual and practical manner. Pupils will explore concepts using concrete materials, before progressing to pictorial and abstract methods (the CPA approach).

Working collaboratively, in mixed attainment groups, children will support each other in mastering key concepts. All pupils have the opportunity to 'master' concepts, whilst ensuring that support is always readily available.

Please also see our 'Calculation Policy' following the CPA approach.

Teaching and Learning

Practical resources are used throughout different stages of the lesson to support teaching and learning, to engage pupils and in order to bring maths to life.

Our mental maths sessions are used to explicitly teach the skills that the children need in order to be able to calculate mentally. Engaging resources and interactive activities set the brisk pace and tone for the session.

Times tables tests occur on a weekly basis. In Year's 2-6, classes will focus on a specific times table each week and this will be differentiated according to the needs of the children. The times tables focus each week will be added on to medium term plans every half term.

Differentiated questioning (including open ended and probing questions) is used throughout our maths teaching to inform Assessment for Learning and address pupils' misconceptions.

During whole class teaching, talk partners are used to allow pupils to support one another and clarify their own understanding. The teacher uses a range of Assessment for learning strategies to ensure all pupils participate in the sessions.

Teacher focus groups are used to assess pupil's understanding and move their learning forward. This should be rotated to give relevant support and extend all pupils to make progress. This allows the teacher to develop an understanding of each pupil's ability and learning needs and therefore informs future planning. Where there is a focus on more practical activities to support the children's mathematical learning, adult deployment will need to be planned carefully.

The teaching assistant is directed by the teacher, as indicated on the planning, to support pupils during different phases of the lesson, planning is discussed on Monday mornings. This could include working with an ability group who is below or above the pitch of the main teaching. In Key Stage 1 and 2 mathematics books are used. In the Foundation Stage – work is displayed in pupil's profile books.

Depth in understanding

It is important that at Harrington Hill we develop the classroom culture needed to enable children to become successful problem solvers. For example, a classroom where:

- Questioning and deep thinking are valued.
- Mistakes are seen as useful.
- Being stuck is seen as honourable.

At Harrington Hill, problem solving opportunities are provided for the children within all our daily maths lessons. We strive to ensure that pupils have a real understanding of the mathematics they are learning. Rather than just a superficial ability to memorise or repeat sets of procedures (i.e. just 'do' the maths), we aim for pupils to engage at a deep level, understanding and explaining what they're doing and how and why it works. A child who has depth in understanding can recognise a concept in an unfamiliar context.

Calculation Strategies

Teaching of calculation strategies should be used according the school's written Calculation Policy. The purpose of this calculation policy is to ensure consistency and progression in the teaching of the different calculation methods across the school. It aims to give an overview of the key written calculation strategies that will be taught in all year groups. All members of staff are expected to be familiar with this policy and apply it consistently across the school.

(See Calculation Policy)

Inclusion

During planning and teaching, activities should be planned to cater for all pupils; ensuring differentiation for pupils with Special Educational Needs, children with English as an Additional Language and the needs of different learning styles are met. Pupil progress meetings focus on individual pupil achievement. Pupils who are risk of not meeting their milestones are discussed and appropriate support is outlined to accelerate their progress. This may include additional 1:1 or small group interventions or targeted support/boosters delivered by a tutor.

Assessment (including Marking and Feedback)

Marking should be completed in accordance with the whole school marking and feedback policy. Formative assessment should be used to evaluate lessons and inform future teaching and learning. Throughout the lesson, assessment for learning strategies will support ongoing evaluation. Assessment data is used during pupil progress meetings at the end of each term, to review class attainment and progress.

Environment

- The maths environment in each classroom should be engaging and stimulating with a wide variety of visual and kinaesthetic resources available. Each class should have a mathematics learning wall linked to current learning. Maths learning walls in each classroom may include:
 - OLI and Success Criteria.
 - Key Vocabulary.
 - Teacher models.
 - Challenge questions.
 - Examples of children's work.
 - In Years EYFS to Year 2, Maths Meeting boards are used to facilitate the Maths Meetings.

Homework

For Year's 3-6, appropriately differentiated homework is set every week on Times table Rockstars.

Monitoring of Subject

Mathematics is monitored through planning and book scrutiny, regular learning walks and lesson observations. The outcome of the monitoring is recorded on the school's monitoring formats and this is sent termly to the head teacher and discussed at SMT meetings. In light of monitoring, clear feedback is given to staff and this is regularly reviewed by the subject lead.

Roles and Responsibilities

Leadership

The maths lead works closely with the senior leadership team in order to:

- Set high expectations and monitor teaching, learning and progress to secure sustained improvement in teaching, learning and assessment of mathematics.
- Use, analyse and present data e.g. from Arbor; use this to inform whole school and key stage priorities and identify strengths and areas to develop for the whole school action plan.
- Ensure the National curriculum is being covered across school and that, although the majority of pupils will move through the programmes of study at broadly the same pace, there is appropriate pitch and differentiation.
- To keep up to date with mathematical publications and research, as well as maintaining contact with agencies outside the school, and to feedback to staff as and where appropriate.
- To conduct learning walks, planning and book looks and feedback to colleagues and the senior management team and give support where needed.
- Keep parents, governors and all support staff well informed.
- Lead by example, showing a thorough understanding of how children learn mathematics.
- Deliver INSET and CPD, both to individuals and whole school as well as model good practice in mathematics teaching to ensure motivated, respected and effective teaching staff.

The role of teachers

Teaching of maths should be at least good across the school, we expect every teacher to have a sound knowledge and understanding of the curriculum so that they can:

- Use effective formative assessment to ensure every lesson counts and every child makes good progress.
- Value the achievements and progress of all pupils, developing depth in understanding.
- Use a variety of teaching and learning approaches including the use of practical equipment and models and images.
- Use different teaching methods and styles to take account of the needs of all pupils and foster the understanding of new concepts that require children to think and reason for themselves.
- Provide practice of skills, ensuring pupils become fluent in the fundamentals of mathematics including through varied and frequent practice.
- Ensure problem solving and reasoning are a key component in all areas of mathematics.

The role of support staff

Support staff play a vital part in identifying and dealing with children who require further assistance or further challenge in sessions, it is vital that they:

- Be engaged in staff training for mathematics where appropriate.
- Be aware of planning including key vocabulary and have a clear understanding of their role in each part of the lesson.
- Consider ways to break down a learning objective when needed, utilising resources to provide a concrete example of a concept.
- Ask questions to promote children's independence and further deepen children's understanding of concepts.
- Deliver interventions to meet the needs of individual children at risk of not meeting their milestones.

The Role of Parents and Carers

We recognise that parents / carers make a significant difference to children's progress in mathematics and encourage this partnership. We ask all parents to:

- Develop positive attitudes to mathematics and actively support their children to access to TTRS (Times Table Rockstars) or complete home learning tasks.
- Use the parents evening feedback to support their child in progressing further.
- Attend workshops and parents' meetings, wherever possible to understand the expectations, strategies and skills used in the teaching of mathematics.

The Role of the Children

Children are our reason for everything we do. We would like them to:

- Gain confidence in mathematics and see its relevance to real life.
- Develop an enjoyment of learning through practical activity, investigation, exploration and discussion.
- Develop mental calculation strategies (alongside written arithmetic) so that their first reaction to a question is 'Can I do this in my head?'
- Understand a wide range of mathematical vocabulary and use it confidently.
- Use their knowledge to solve problems, see patterns, make predictions, present information clearly, interpret data and reason mathematically.
- Give oral and written explanations of their methods and reasoning as appropriate.
- Have access to TTRS (Times Table Rockstars) and other online resources for use in and out of school time.