

# HARRINGTON HILL PRIMARY SCHOOL

## MATHS POLICY



**REVIEWED:**

January 2021

**NEXT REVIEW DATE:**

January 2022

**Leadership Committee signed:**

**Chair of Governors signed:**

**Head Teacher signed:**

## **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.
- Make mathematics interesting and exciting through bringing maths to life.
- 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.
- 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 (challenge by choice)
- Vocabulary building and talk opportunities
- Problem solving and mastery elements
- CPA approach (Concrete, pictorial, abstract)
- Child-led enquiry based, practical elements and real life contexts
- Cross-curricular approach, celebrating diversity in maths
- Incentivised, linked through praise and rewards
- Fostering strong links with our community and parents

## Structure of Maths Teaching

In **Key Stage 1 and Key Stage 2** mathematics is taught for one hour each day through the following structure:

- At the beginning of every maths lesson, the children are given a green pen question, which is linked to the previous days learning. This will be targeted based on their understanding of the previous day.
- The main teaching session includes a balance of teacher modelling, independent and group work. The children will get a chance to explore mathematical concepts with a focus on bringing maths to life. Well-planned questioning will take place, which informs continuous teacher assessment, and partner-talk.
- 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. 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 plenary activities provide opportunities to consolidate learning, address misconceptions and evaluate and extend understanding.
- In Year's One-Six, we have extra sessions for mental maths to explicitly teach the skills that the children need in order to be able to calculate mentally. In Year One, we have two 15 minute mental maths sessions each week. In Year's 2-6, we have three 15 minute mental maths sessions each week.

In **the Foundation Stage**, all elements of the session are present; timings are reduced for appropriate learning and teaching sessions. In The Early Years Foundation Stage 'mathematical learning...needs to be predominantly social in nature and rooted in ...play activities' (Williams Report 2009).

Through their planning and practice, teachers, teaching assistants and nursery officers ensure that they:

- 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, for example, for pupils to discover things through practical situations or their physical activity.
- Ensure that mathematical resources are readily available both indoors and outside.
- Develop mathematical understanding through all pupils' early experiences including through stories, songs, games and imaginative play.
- 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.

## **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 emailed to the Head Teacher, PA and your year group team by 9am on Monday morning.

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.

### **'Challenge by Choice'**

In Years 1-6, we plan and teach our engaging maths lessons using 'Challenge by Choice'.

During these lessons our children are in control of their own learning within the structure of

the national curriculum, enabling each child to 'learn without limits'. Children are encouraged to become autonomous thinkers who choose the level of learning that is right for them that day. 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.

This may be very different to the way in which you were taught yourself, but your class teacher is always willing to help show our methods. Please also see our 'Calculation Policy' following the CPA approach.

### **Teaching and Learning**

**In Key Stage 1 and Key Stage 2** mathematics is taught for one hour each day through the following structure:

- The oral mental starter is used to rehearse and revisit objectives rather than for direct teaching. Engaging resources and interactive activities set the brisk pace and tone for the whole lesson. This is five to 10 minutes of the lesson time.
- The main teaching session includes a balance of teacher modelling, well-planned questioning which informs continuous teacher assessment, and partner-talk.
- The 'challenge by choice', my turn your turn, sessions are appropriately differentiated and provide an opportunity for pupils to practise and apply knowledge, skills and understanding to the given maths area.
- It also allows the teacher to develop a marking dialogue with the pupil and engage the children in green pen dialogue.

The plenary activities provide opportunities to consolidate learning address misconceptions and evaluate and **extend** understanding.

**In the Foundation Stage**, all elements of the session are present; timings are reduced for appropriate learning and teaching sessions. In The Early Years Foundation Stage 'mathematical learning...needs to be predominantly social in nature and rooted in ...play

activities' (Williams Report 2009) Through their planning and practice, teachers, teaching assistants and nursery officers ensure that they:

- 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?" Value pupil's own graphic and practical explorations of each area.
- 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, for example, for pupils to discover things through practical situations or their physical activity.
- Ensure that mathematical resources are readily available both indoors and outside.
- Develop mathematical understanding through all pupils' early experiences including through stories, songs, games and imaginative play.
- 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.

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.

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.

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.

### **Problem Solving**

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. However, it is important that the children are given the chance to develop specific problem solving skills. Therefore, every Friday, the children will have a maths lesson where they will learn how to use key problem solving skills. Over the course of the year the children will work on how to use and apply the following problem solving skills:

1. Trial and improvement
2. Working systematically
3. Pattern spotting
4. Working backwards
5. Reasoning logically
6. Visualising
7. Conjecturing

(See problem solving in mathematics overview)

### **Calculation Strategies**

Teaching of calculation strategies should be used according to 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. For some pupils, interventions are provided e.g. precision teaching. Where relevant, pupils have maths targets on their IEP's. In Year 5 and 6 maths tutorials are used to support targeted pupils.

## **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. Every half term, the children will sit the assertive mentoring maths test. This allows teachers to identify misconceptions, which will inform future planning. 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 will show the following:

- Consistent learning wall signs.
- OLI and Success Criteria.
- Key Vocabulary.
- Teacher models.
- Challenge questions.
- Examples of children's work.

## **CPD**

All staff involved with the teaching of Mathematics will be entitled to professional development opportunities. These will include:

- In-school Inset or staff meetings (for both teachers and teaching assistants).
- Support with planning.
- In-school sharing of learning (for example, observations, peer observations or development meetings).

- Training, which may be out of school (for example, to deliver a particular programme, or develop an area of Mathematics teaching and learning).

These opportunities will be agreed by each staff member, with the person in charge of professional development and the Mathematics Leader and will always be in line with the School Development Plan and Appraisal agreed targets. Members of Staff are expected to feedback after attending external training in order to support the whole school in improving their practice. (As in line with the school CPD policy)

### **Homework**

For Year's 1-6, appropriately differentiated homework is sent out every week on a Tuesday and should link to the times tables, mental and oral focus or a focus area from the main activities during the week.

### **Role of Subject Leader**

- To lead the teaching of mathematics, demonstrating excellent practice.
- To advise and support colleagues in all aspects of the implementation of mathematics throughout the school.
- To lead or to organise appropriate INSET where necessary, in line with the School Development Plan.
- 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 monitor and assess progress in mathematics, informing colleagues, and acting on areas where further progress is needed.
- To participate in Pupil Progress Meetings with each class teacher.
- To conduct planning and book reviews and feedback to colleagues and the senior management team and give support where needed.
- To carry out regular learning walks to monitor provision and give clear feedback to staff.
- To review the use of mathematical resources, and to organise ordering within the budget designated for mathematics.

### **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 weekly to the head teacher and discussed at weekly SMT meetings. In light of monitoring, clear feedback is given to staff and this is regularly reviewed by the subject lead.