# Maths Policy

## Introduction

'Mathematics is a creative and highly interconnected discipline that has been developed over centuries providing the solution to some of history's most intriguing problems. It is essential to everyday life, critical to science, technology and engineering and necessary for financial literacy and most forms of employment. A high quality mathematical education therefore provides a foundation for understanding the world, the ability to reason mathematically, an appreciation of the power and beauty of mathematics, and a sense of enjoyment and curiosity about the subject.' (DfE 2013)

As can be seen from the above introduction, mathematics pervades all aspects of our lives and helps us to make sense of our world. With this in mind this policy promotes the basic and wider understanding of mathematics, and hopes to instil an enjoyment in the subject by supporting children to engage with it and build upon their own understanding and promote further learning.

## School Purpose and Policy:

Hawthorn Park Community Primary School's Policy has been developed on the basis of the new National Curriculum for England. The policy is written with consideration to our school commitment to enthuse and excite children to become lifelong learners. The National Curriculum provides a framework for mathematics but the school is aware of the need for flexibility and creativity in teaching and learning styles in response to the needs of individual children.

## Aims

- In our school we aim to promote children's curiosity and enable them to safely risk take and learn from first hand experience wherever necessary
- Our primary focus is to support the children to become fluent in mathematical understanding from the most basic level so that they can build upon their own understanding.
- We aim to enable our children to develop conceptual understanding, recall of number facts and patterns and apply their knowledge rapidly and accurately.
- We aim to promote children's ability to reason through opportunities to discuss their thinking and understanding. This emphasis may result in less written work but much deeper understanding.
- We promote problem solving and solution finding. This is not only true in mathematical learning but in almost all aspects of school life.
- Provide children with the opportunity to achieve their potential in the basic skills of Mathematics
- Strive to equip our children with the skills through which to maximise modern technology
- Provide each child with experience of success achieved through appropriate challenges
- Celebrate everyone's achievement

- Recognise and seek to meet the needs of all our children
- Provide support for children in developing tolerance and understanding of themselves, others and the rules and expectations of the societies in which they live
- Offer opportunities for all children to experience the widest range of Learning activities.
- Enthuse and motivate all our pupils to embrace lifelong learning
- Work in partnership with parents and carers.

## National Curriculum Aims:

At Hawthorn Park Community Primary School high standards of Mathematics are delivered in line with The National Curriculum 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 develop conceptual understanding and the ability to recall and apply knowledge rapidly and accurately.
- **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.

## Pupils' Mathematical Experiences and Expectations

The approach to mathematics needs to be sufficiently broad, balanced and relevant to ensure that the interests of pupils' can be engaged and their motivation sustained. Children will be given the opportunity to work individually and in groups of varying size and abilities. A range of mathematical activities should be suited to the abilities, ages and interests of the pupil. It is of utmost importance that account is taken of the level at which a pupil is working and that appropriate work is provided for all abilities of children. A range of resources will be used to aid the learning/teaching of mathematics including books, learn pads and computers. In our school, the focus will be on developing confidence and fluency with whole numbers, counting and place value. Children will develop their ability to recognise, describe, draw, compare and sort different shapes and use related vocabulary. They will be taught to use a range of measures to describe and compare different quantities including length, mass, capacity/ volume, time and money Our children will be taught to read and spell a range of mathematical vocabulary. Children will be taught arithmetic including all four operations (addition, subtraction, division and multiplication) in line with the Calculation Policy.

## Classroom Management

In our school a variety of approaches will be used to promote efficient learning and interest and enjoyment in the subject:

1. Specific daily mathematics lesson
2. Daily Flurrish sessions
3. Mathematics topics
4. Maths play including games, role-play and solving real life problems
5. Cross curricular work and activities

Our children will be taught mathematics daily in a whole class session. On occasions children will be taken out in groups and taught separately. In Early Years this usually will be a short input session and in KS1 and KS2 the session will usually follow the format of:

Starter Activity - mental and oral activities (including counting, chanting, rhymes and songs)

Main Teaching Activity – teacher directed with pupil interaction and involvement

Practise and Consolidation - children working at tasks related to main teaching input. Work may involve groups, pairs, individuals or whole class activities. During this time the teacher/TA will work with an identified group as an additional teaching opportunity

Plenary - this can be used to review and re-teach lesson content, highlight common errors, relate work to events beyond the classroom, promote next steps in learning and/or further develop the work at a higher level. It may also be used to develop other maths skills e.g. problem solving.

Teachers will use time flexibly but must show awareness of time spent to promote optimum learning and concentration for their children. As far as possible, resources will be openly accessible for pupils to select in their learning environment. This will encourage the selection of appropriate materials and mathematics. Each classroom should have resources which are located and labelled to make them easily accessible to children. Each class should have the following resources; number lines, 100 squares, multilink cubes, number cards, number fans, place value cards and place value mats. The use of displays of words should not be static- they should be interactive so that children become familiar with them but not so familiar that they ignore them. The Maths Leader will monitor maths displays to promote them as learning tools. Learning posters and displays will clearly display the current mathematical learning which will support consolidation and promote deeper learning. Each class should have vocabulary to show halves and doubles, money denominations, symbols and vocabulary of calculation rules. Children have daily Flurrish sessions that are conducted on Learn Pads and Tablets. The Flurrish app is used to ensure fluency of timetable and number facts including number bonds.

Resources in classrooms will include:
Number fans
Number cards
Dice
Timers
Multilink/ Unifix cubes and boards
Counters and sorting equipment
Puzzles and maths games
Money
Dominoes- correctly sorted into sets
Whiteboards and pens
A variety of number lines and number tracks
3D shapes and 2D shapes
Rulers
100 squares
Counting games
Pegs and boards
Spinners
Compare Bears
Linking Elephants
Balance pans and scales

## Planning

Long term planning for maths is detailed in the Hamilton Scheme of work. Teachers will differentiate appropriately to ensure all children are provided with appropriate work for their current ability. Mastery and higher level work is provided for those more able pupils and extra intervention and apparatus is provided for those children that need them.
Teachers will cover the units according to the stage of development of the children in their care and broadly following previous medium term planning based on this Framework. Coverage is ensured by discussion at staff and team meetings and through the monitoring of planning by the Head Teacher. Teachers will keep a planning file corresponding to their teaching year group. They also use a range of other material to support their short term planning. Teachers should adapt the Hamilton weekly planning using the school proforma and this forms the short term planning. Short term planning should include learning objectives, success criteria, robust differentiation, allocation of homework, assessment for learning and higher order questioning and the location and purpose of adult roles throughout the lesson. Weekly planning is monitored regularly by the Head Teacher with feedback provided and agreed by teachers.

## Recording of Work

Recording will take differing forms depending on the nature of the activity. Much mathematical work involves discussion and therefore will not be recorded in written forms.

Presentation of written work:-

There is a need for practise of pencil and paper methods but there should not be over emphasis of mathematical work out of context. EYFS record observations and children's written work within their learning journals. Year 1 have A5 sized books to record their work in with 1cm squares. All work will be done in A4 books from Year 2 through to Year 6, with Key Stage 1 having 1cm squares. Year 3 and Year 4 have 7mm squares and Year 5 and Year 6 5mm squares. Children should record one number in each box within their maths books. Opportunities to practise will be given to children on the mechanics of writing number symbols. Throughout school, children will find it necessary to record and present their work in their own books / paper. In order to develop presentation skills we envisage that children at different stages of development will have different needs and requirements. In Key Stage 1 and Key Stage 2 children will write the short date at the top of each page with a margin 3 to 4 squares deep from the right side of each page. In both Key Stage 1 and Key Stage 2 the Learning Objective and Success Criteria should be clearly visible at the top of each piece of work. Each activity which the children undertake will have the learning objective discussed with the children and displayed on the white board for the children to refer to throughout the lesson before they proceed with the task so that they know exactly what is expected of them.

## Parental Involvement

Homework is given to children to support and extend the work taught in school. In KS1 and KS2 the children take home one piece of Maths homework weekly which reinforces or extends the work covered in the classroom that week. Early Years children are given tasks to complete with parents / carers as appropriate. Further detail can be found in the Homework Policy.

## Special Educational Needs

Within the National Curriculum, children of all ages and abilities are catered for. Those with special mathematical needs will be provided with appropriate work at their own level of ability, which will facilitate an extended learning process. Having determined the child's needs, appropriate learning steps will be presented and achievement of these will promote good progress. Liaison will take place with the SENDCo if particular provision is required in an individual learning plan with reference to the new SEN Code of Practice. Particular reference should be made to the School SEN Policy. Those children that are more able and gifted and talented are the responsibility of the class teacher who ensures that they have access to challenging and thought provoking tasks which will enhance their mathematical knowledge and understanding. At the start of each academic year teachers project expected progress for each child in their class. Assessments confirm the progress they have made each term towards their predicted targets. Children who are not making expected progress will be identified and provided with support in particularly weak areas to boost their learning.

## Assessment

Assessment in Mathematics will reflect the overall school Assessment Policy. Assessment will include formative, diagnostic, summative and evaluative elements to enable effective planning. In Early Years, Key Stage 1 and Key Stage 2 teacher assessment will be continuous and evaluative to ensure any problem areas are addressed through the planning and delivery of maths this is done through the use of assertive mentoring. Gap analyses are conducted through the use of Assertive Mentoring through Key Stage 1 and Key Stage 2 half termly so that any areas of development can be addressed. At the end of Key Stage 1 and Key Stage 2 assessment will incorporate Teacher Assessment and End of Key Stage Assessment in line with National Curriculum requirements. In Foundation Stage children will be assessed using the EYFS Assessment procedures.

## Cross Curricular

- Mathematics is a subject that has links with a wide range of subjects. By adopting a cross curricular approach mathematics can have a real relevance to everyday life. Approaches to cross curricular work include:-
- A mathematics event for parents/ carers and children to share
- ICT involves many mathematical concepts
- Use of mathematical concepts in Science lessons
- Topic work e.g. Food involves sorting and classifying
- Art work involves shape and pattern
- Dance and PE develops spatial awareness, sequences and pattern
- Music involves counting, patterns and rhythms - Measuring is often linked to Geography and Science outdoor work

Many mathematical concepts are developed in the Foundation Stage outdoor classroom such as counting, measuring when working with structures, shapes and space when building and constructing materials. At Hawthorn Park Community Primary School every effort is made to ensure that learning is meaningful and makes sense to the child. Whenever possible we promote cross curricular learning.

## Equal Opportunity

All work is planned to ensure equal access and opportunity for all children.

## Staff Development

Each teacher is responsible for the delivery of mathematics in their class. If any teacher feels a need for particular INSET, discussion should take place with the Maths Leader / Head Teacher. The responsibility for the overall mathematics curriculum and resource management is designated to the Maths Leader.

## The Role of the Maths Leader and Monitoring

As Mathematics is involved in many aspects of the learning which takes place in school, the Maths Leader needs to ensure close liaison with other Subject Leaders to ensure that children are provided with appropriate opportunities and resources to enable them to engage in mathematical activities in a cross curricular way. The role of the Mathematics Leader is to:-

- Organise in-service training for staff in Mathematics
- Ensure that appropriate resources are available
- Provide 'expertise' to assist staff in the delivery of the curriculum
- Provide support for NQT's and Teaching Students in Mathematics
- Ensure continuity and progression from Nursery to Year 6
- Know and understand how children become numerate and communicative
- Evaluate on a regular basis the policy and scheme of work and ensure they form the basis of practice of Mathematics within the school
- Keep updated in Mathematical developments through appropriate in-service training
- Keep a Monitoring file which is informative and relevant including book scrutinies, gap analysis, Learning Walks, Lesson Observations.
- Audit provision for mathematics across the school in terms of teaching and learning, resources, standards on a regular basis
- Prioritise improvements for the teaching and learning of mathematics across the school and contribute to the school improvement plan
- With the Head Teacher track the progress of identified groups of children and be involved in a thorough evaluation of Mathematics looking at trends over time, value added from baseline predictions to end of Key Stage Assessment results

## Policy Review and Evaluation

Evaluation of this policy will be ongoing and will be carried out through team meetings, planning meetings, lesson observations and evaluations. Resources will be audited on a regular basis and proposals for new resources will be discussed with the Head Teacher and Maths Coordinator.

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