

Learning is fun at

## Park Hill Infants' School



*All different, All equal, All achieving*

# Mathematics Policy

July 2019

Date	Version	Status / Comments / Description
July 2017	1.0	Original Revised Policy
June 2019	1.1	Reviewed and re formatted
July 2019		Approved by FGB - 9 July 2019

## 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.

Our objectives in the teaching of mathematics are:

- to promote enjoyment of learning through practical activity, exploration and discussion;
- to promote confidence and competence with numbers and the number system;
- to develop the ability to solve problems through decision-making and reasoning in a range of contexts;
- to develop a practical understanding of the ways in which information is gathered and presented;
- to explore features of shape and space, and develop measuring skills in a range of contexts;
- to demonstrate fluency by recalling their knowledge of number rapidly and accurately.
- to help children understand the importance of mathematics in everyday life;
- to develop the cross-curricular use of mathematics in other subjects;
- to develop independence, foster curiosity and encourage perseverance;
- to develop connections between mathematical areas.

## Teaching and learning style

The school uses a variety of teaching and learning styles in mathematics. Our principal aim is to develop children's knowledge, skills, application and understanding. During our daily sessions, we encourage children to talk about their learning, by asking how they can solve problems to find answers. They have the opportunity to use a wide range of resources, such as Numicon, number lines, number squares, digit cards and small apparatus to support their work. Computing is used in mathematics lessons for modelling ideas and methods and for children to use and apply and what they have learned.

In all classes, children have a wide range of mathematical abilities. We recognise this fact and provide suitable learning opportunities for all children to be challenged at their own level. We achieve this through a range of strategies – through differentiated group work, organising the children to work in pairs or mixed ability groups on open-ended investigations or games, or by utilising adults within the class to support or extend groups of children. The opportunity for independent challenge is provided frequently, and children are able to select their own challenge within sessions.

## Mathematics curriculum planning

Mathematics is a core subject, therefore, Year One and Two follow the National Curriculum in mathematics. Mathematics is taught within our personalised curriculum which is built upon the National Curriculum and supports children to develop mastery in mathematics. Mastery of mathematical concepts means “acquiring a deep, long-term, secure and adaptable understanding of the subject” (NCETM 2017).

Year Groups together plan weekly maths sessions to ensure that all activities are challenging and meeting every child's developing next steps. The class teacher uses these plans, to evaluate lessons and often meets with the subject leader to discuss them on an informal basis. These plans are monitored by the Headship team on a termly basis.

Mathematics activities are planned so that they build on the children's prior learning and allows connections to be made. We ensure children of all abilities are given the opportunity to develop their skills, knowledge and understanding. Progression and challenge are an important aspect of our curriculum, so that every child can make individual progress to achieve their full potential.

### **A brief synopsis of the National Curriculum for Mathematics**

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 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

Mathematics is an interconnected subject in which pupils need to be able to move fluently between representations of mathematical ideas. The programmes of study are, by necessity, organised into apparently distinct domains, but pupils should make rich connections across mathematical ideas to develop fluency, mathematical reasoning and competence in solving increasingly sophisticated problems. They should also apply their mathematical knowledge to science and other subjects. ( DFE, "The National Curriculum in England", 2013 pp 103)

The Mathematics Curriculum is split into 7 domains, with using and applying running across all of them.

The Domains are;

1. Number - number and place value
2. Number – addition and subtraction
3. Number – multiplication and division
4. Number – fractions
5. Measurement
6. Geometry – properties of shape
7. Geometry – position and direction

Within these domains are detailed statutory requirements and it is from these that we take our objectives, and assess the children against.

### **Mathematics and Inclusion**

At our school, we teach mathematics to all children, whatever their ability and individual needs.

One of the principles of teaching for mastery is that every child can succeed in maths, and that the majority of children in the class should move at the same pace. In practice, this means that children who have mastered concepts or skills quickly should be challenged through activities and investigations that deepen their understanding of that idea, rather than moving on to new content. Children who do not master a

concept as quickly as the rest of the class should be supported to enable them to keep up. An effective way of doing this is through same day intervention, which helps children who need more time and support in order to achieve mastery. Our planning is structured in a way that supports all children to learn the curriculum objectives at their own pace.

Mathematics forms part of the school curriculum policy to provide a broad and balanced education to all children. Through our mathematics teaching, we provide learning opportunities that enable all pupils to make at least expected progress. We strive hard to meet the needs of those pupils with Special Educational Needs & Disabilities (SEND), those that are more able, and those learning English as an Additional Language (EAL).

When progress falls significantly outside the expected range, the child may have SEND. Our assessment process looks at a range of factors – classroom organisation, teaching materials, teaching style, and differentiation – so that we can take some additional or different action to enable the child to learn more effectively. We assess children termly, using assessment materials and against the new National Curriculum expectations. This allows us to consider each child's attainment and progress against the expectations within our school. This ensures that our teaching is matched to the child's needs.

Intervention will firstly occur through 'Provision Mapping' where children will receive in-class (and out-of-class interventions), with specific tailor made targets to accelerate their progress. If progress still falls outside the expected range, the child may be registered on the SEND register. This may lead to the creation of an Individual Support Plan to provide more specific individual targets for children with special educational needs.

**We enable all pupils to have access to the full range of activities involved in learning mathematics. Children participate in activities outside the classroom such as Number Days and Challenge workshops which are organised annually.**

### **Assessment for learning (AFL)**

Both formative and summative assessment is used to assess whether or not pupils have mastered core concepts. Formative termly assessments, note whether children have mastered and retained the objectives from each term. We make long-term assessments towards the end of the school year, and use these to assess progress against school and national targets. We can then set targets for the next academic year and make a summary of each child's progress to discuss with parents and carers. We pass this information on to the next teacher at the end of the year, so that s/he can plan for their new class. Children in Year Two sit the National SAT's in May each year.

The mathematics subject leader, alongside the assessment leader, has regular discussions with the class teachers regarding each class's attainment.

Children in Key Stage One are encouraged to make judgements about how they can improve their own and each other's work. Children across the school have maths targets to ensure that they take ownership of their learning and are aware of their own next steps.

### **The Early Years Foundation Stage**

We teach mathematics in our reception classes through the Mathematical Development aspects of the EYFS curriculum. As our Reception classes are part of the Early Years Foundation Stage we relate the mathematical aspects of the children's work to the objectives set out in the Early Years Guidance, which underpins the curriculum opportunities for children aged birth to five. All children participate in a variety of learning activities aimed at providing them with the skills needed to achieve the Early Learning Goal in both Number and Shape, Space and Measures. We give all the children ample opportunity to develop their understanding of number,

measurement, pattern, shape and space, through practical, hands on activities inside and outside, that allow them to enjoy, explore, practise and talk confidently about mathematics.

## **Contribution of mathematics to teaching in other curriculum areas**

### **English**

The teaching of mathematics contributes significantly to children's understanding of English in our school by actively promoting the skills of reading, writing, speaking and listening. For example, in mathematics lessons, we expect children to read and interpret problems, in order to identify the mathematics involved. They are also improving their command of English when they explain and present their work to others during sessions. In English lessons too, maths can contribute: younger children enjoy stories and rhyme that rely on counting and sequencing, while older children encounter mathematical vocabulary, graphs and charts when reading non-fiction texts.

### **Personal, social and health education (PSHE) and citizenship**

Mathematics contributes to the teaching of PSHE and citizenship. The work that children do outside their normal lessons encourages independent learning and helps them to become increasingly independent learners. The planned activities that children do within the classroom encourage children to work together and respect each other's views. We present children with real-life situations in their mathematics work, for example on the spending of money, time etc.

### **Spiritual, moral, social and cultural development**

The teaching of mathematics supports the social development of our children through the way we expect them to work with each other in lessons. We group children so that they work collaboratively, and we give them the chance to discuss their ideas and results.

### **Mathematics and Computing**

Computing enhances the teaching of mathematics significantly, because computing is so versatile. It also offers ways of impacting on learning which are not possible with conventional methods. Teachers can use software to present information visually, dynamically and interactively, so that children understand concepts more quickly. Younger children use computing to communicate results with appropriate mathematical symbols. Older children use it to produce graphs and tables when explaining their results, or when creating repeating patterns. When working on control, children can use both standard and non-standard measures for distance and angle. They can also use simulations to identify patterns and relationships. Children use programmes such as Mathletics and Espresso to practise mathematical concepts via games on I-pads. This is a good motivator for some children which supports their progress and attainment.

### **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, and by providing a strategic lead and direction for this subject;
- Gives the Headteacher an annual summary report in which they have evaluated the strengths and weaknesses in mathematics, and indicates areas for further improvement;
- Uses specially allocated regular management time to review evidence of the children's work, and to observe and demonstrate mathematics lessons across the school.

The quality of teaching and learning in mathematics is monitored and evaluated by the Headship team as part of the school's agreed cycle of lesson observations.

A named member of the school's governing body is briefed to oversee the teaching of mathematics. The mathematics governor meets regularly with the subject leader to review progress and keep up to date with mathematics teaching in our school.

This policy will be regularly monitored and will be reviewed every two years, or sooner if required.

Signed: \_\_\_\_\_

Print Name: \_\_\_\_\_

Date: \_\_\_\_\_