PARK PRIMARY SCHOOL
MATHEMATICS POLICY

Governors Approved:

Review date: September 2023

Date of next review: September 2024

Communicated to staff on:

Introduction

At Park Primary School we value every pupil and the contribution they have to make. As a result, we aim to ensure that every child achieves success and that all are enabled to develop their skills in accordance with their level of ability.

Mathematics is both a key skill within school and a life skill to be utilised throughout every person's day to day experiences.

NB. This policy works in conjunction with Park Primary Whole School Curriculum Map and Progression Skills documents.

Rationale

Mathematics equips pupils with a uniquely powerful set of tools to understand and change the world. These tools include mathematical fluency, reasoning, problem solving skills and the ability to think in abstract ways. Mathematics is important in everyday life. It is integral to all aspects of life and with this in mind we endeavour to ensure that children develop a positive and enthusiastic attitude towards mathematics that will stay with them.

The National Curriculum for Mathematics (2014) describes in detail what pupils must learn in each year group. Combined with our Calculation Policy and Marking Policy (which both act as an appendicies to this policy), this ensures continuity, progression and high expectations for attainment in mathematics.

At Park Primary School, we use the National Curriculum for Mathematics (2014) as the basis of our mathematics programme which is based on the 'Mastery' method of mathematics teaching. We are committed to ensuring that all pupils achieve mastery in the key concepts of mathematics, appropriate for their age group, in order that they make genuine progress and avoid gaps in their understanding. Park Primary School utilises the White Rose Maths Schemes of Learning for Mastery. By adopting a Mastery approach to the teaching of mathematics, we will ensure that all pupils reach their potential in the subject through the focused teaching of fluency, reasoning and problem solving.

Aims / Intent

- To foster a positive attitude to mathematics as an interesting and attractive part of the curriculum.
- To develop the ability to think clearly and logically with confidence, flexibility and independence of thought.
- To develop a deeper understanding of mathematics through a process of enquiry and investigation.
- To develop an understanding of the connectivity of patterns and relationships within mathematics.
- To develop the ability to apply knowledge, skills and ideas in real life contexts outside the classroom, and become aware of the uses of mathematics in the wider world.

- To develop an ability and inclination to work both alone and cooperatively to solve mathematical problems developing qualities such as resilience, independent thinking, cooperation and self- confidence through a sense of achievement and success.

Principles of Teaching and Learning (Implementation and Impact)

The school uses a variety of teaching and learning styles in mathematics lessons during each lesson but with our Mastery approach at the heart of learning. Teachers are encouraged to use adaptive teaching methods as opposed to pre-set differentiation. Within this adaptive teaching, children are encouraged to utilise the manipulatives that they feel can help them explore the problem they are tackling.

Our teachers strive to (Implementation + section below):

- Build children's confidence and self-esteem.
- Develop children's independence.
- Allow all children to experience regular success.
- Contextualise mathematics.
- Use practical approaches to mathematics (manipulatives, models and images where appropriate).
- Encourage children to independently select resources to help them.
- Challenge children of all abilities.
- Encourage children to enjoy mathematics.
- Develop a child's understanding of mathematical language and key mathematical vocabulary.
- Learn from teachers, peers and their own mistakes.
- Allow children to ask questions as well as answer them.

Our pupils should (Impact):

- Have a well-developed sense of the size of a number and where it fits into the number system (place value).
- Know by heart number facts such as number bonds, multiplication tables, doubles and halves.
- Use what they know by heart to figure out numbers mentally.
- Calculate accurately and efficiently both mentally and in writing, drawing on a range of calculation strategies.
- Make sense of number problems, including non-routine/'real' problems and identify the operations needed to solve them.
- Explain their methods and reasoning, using correct mathematical terms.
- Judge whether their answers are reasonable and have strategies for checking them where necessary.
- Suggest suitable units for measuring and make sensible estimates of measurements.
- Explain and make predictions from the numbers in graphs, diagrams, charts and tables.

- Develop spatial awareness and an understanding of the properties of 2D and 3D shapes.
- Make cross-curricular links demonstrating an awareness of mathematics in everyday life and how maths can be applied to other subject areas.

How will we implement our implementation? To provide adequate time for developing mathematics, maths is taught daily and discretely. However, application of skills are linked across the curriculum where appropriate. As part of our whole school curriculum, teachers and learners look for any opportunity to make cross-curricular links both during mathematics lessons (to other subjects) and in lessons of other subjects (to maths). This helps to develop our children's ability to understand that maths can be applied and utilised in real life situations.

Arithmetic
From Year 2 to Year 6, it is expected that maths lessons will include a dedicated arithmetic session. This is to give children time to practise their existing skills in a timed environment. At Park, we aim to build each child's confidence in their arithmetic skills through regular practice. This varies in frequency in each year group; for example, it is expected that children will undertake daily or near daily arithmetic sessions in Year 6 whereas, in Year 2, this may happen once a week to begin the year. Frequency of arithmetic sessions are at the discretion of the teacher based on the needs of their class but teachers should bear in mind the primary aim of improving a child's arithmetic skills by the end of Key Stage 2.

These arithmetic sessions are also used a form of assessment. Arithmetic sessions give the teacher an opportunity to assess prior knowledge and identify any gaps in learning that may need to be re-taught in a future 'main' part of lesson or addressed through intervention.

Maths Curriculum Planning
Mathematics is a core subject in the National Curriculum and we use the objectives from this to support planning and to assess children's progress.

Staff use the White Rose Hub Schemes of Learning for Mastery to formulate long, medium and short-term planning respectively. The class teacher completes weekly planning for the teaching of mathematics in concert with the Mastery Schemes of Learning. White Rose is used a skeleton plan for teachers – teachers utilise the small steps of learning, resources and question prompts to plan and create resources appropriate for the children they are teaching.

Cross-curricular links
At Park, one of our ongoing aims is to make links across subjects and across the curriculum. Teachers are encouraged to help children make such links both during maths lessons and in lessons of other subjects. For example, data handling is one area of maths that can lend itself to excellent cross-curricular work involving science, history and geography. Teachers will take the opportunity to make 'real life', context-specific links that help children build on their learning year on year as well as from subject to subject. This helps to further embed skills that are taught in more than one subject by reinforcing the need for children to make links in their learning across the subjects.

Multiplication Tables
At Park, we are committed to pupils achieving fluency of their times tables as early as possible during their primary education (and by the end of Year 4 at the latest). Tables are taught using a variety of methods which include learning by rote, times tables games, use of Times Tables Rock Stars, chanting, singing, understanding times tables patterns and understanding times tables facts. The teaching and practise of times tables is done via

dedicated daily sessions in order to address and improve this important area of development at Park. A variety of methods is used to teach and practise these key skills: Times Tables Rock Stars, Times Tables Race, passport to break, passport to lunch, assembly line up, playing games such as 'You're Brainy', 'Hit the Button' and 'Around the World', encouraging children to practise tables at home and asking their parents to challenge them.

We have a weekly incentive scheme which encourages children to use Times Tables Rock Stars at home. Certificates are presented in celebration assembly each week for different achievements in Times Tables Rock Stars e.g. highest number of coins earned, highest level of accuracy, highest number of correct answers, greatest amount of time spent on TT Rock Stars.

Assessment

This section details the various assessment methods and practices used in Park Primary School through which we ensure that children are making appropriate progress and that the activities they take part in are suitably matched to their ability and level of development.

Formative Assessment (AfL) - (monitoring children's learning):
Assessment is an integral and continuous part of the teaching and learning process at Park Primary School and much of it is done informally as part of each teacher's day to day work. Teachers integrate the use of formative assessment strategies such as effective questioning, clear learning objectives, the use of success criteria, effective feedback and response in their teaching and marking and observing children participating in activities. Findings from these types of assessment are used to inform future planning.

Arithmetic sessions also provide an opportunity for assessment. Please see the arithmetic section above for further information.

Summative Assessment – (evaluating children's learning):
More formal methods are used to determine the levels of achievement of children at various times during the school year:

Summative Assessment Weeks:
A combination of standardised tests and teacher assessment are used at summative assessment points. They allow the school to measure each child's attainment in all areas of mathematics, and compare this with an 'average' for children of that age. The results are used to monitor individual's progress year on year and identify those children who are in need of support through intervention or have Special Needs in mathematics.

Each year group uses different assessment schemes. Year 6 and Year 2 use past SATs papers to assess the children. The school has bought into the NFER assessment scheme in Year 3, 4 and 5 although not for arithmetic as the papers are not arithmetic-based. Year 1 undertake continuous assessment and groups of children will tackle independent tasks on a regular basis. Please see below for further information on assessment in EYFS.

Using teacher assessment alongside the results of summative assessment, the teacher will use a 'best fit' approach and assess each child as either 'commencing', 'developing', 'secure' or 'advanced' against the criteria for age-related expectations.

Statutory End of Key Stage Assessment.
The National Curriculum requires that each child is assessed at the end of KS1 and KS2 (Year 2 and Year 6). At this point they are assessed as to whether they are meeting age-related expectations, are working towards age-related expectations or have achieved greater depth in the curriculum.

Maths in the Early Years Foundation Stage

Maths starts in FS1 where we follow Master The Curriculum for our adult led maths sessions and in whole class provision. In FS2, we utilise the White Rose Early Years framework for resource creation and lesson ideas. Throughout EYFS, we offer a wide range of opportunities to explore mathematical concepts; both planned and self-initiated inside and outdoors. Children also take part in whole class and group activities designed to develop mathematical language, fluency, reasoning, and problem-solving skills with manipulative used to build concepts.

On-going assessments are used to inform planning to build on prior knowledge and understanding and are used to establish which children are able to dig deeper into different mathematical concepts.

Intended Outcomes

Mathematics: Number
By the end of the EYFS, pupils should have a deep understanding of number to 10, including the composition of each number. Subitise (recognise quantities without counting) up to 5. Automatically recall (without reference to rhymes, counting or other aids) number bonds up to 5 (including subtraction facts) and some number bonds to 10, including double facts.

Mathematics: Numerical Patterns
By the end of the EYFS, pupils should verbally count beyond 20, recognising the pattern of the counting system. Compare quantities up to 10 in different contexts, recognising when one quantity is greater than, less than or the same as the other quantity. Explore and represent patterns within numbers up to 10, including evens and odds, double facts and how quantities can be distributed equally.

Resources
A bank of essential mathematics resources and manipulatives are available in each classroom and we encourage children to independently select which manipulatives they need to complete a task.

Supporting Bilingual Speakers
In our teaching of Maths we place particular emphasis on the teaching and development of mathematical language and use a wide range of strategies to support all pupils including those that speak English as an additional language. We do this through using visual and practical resources and explanations. Where possible we use a child's home language. Key vocabulary is emphasised in whole class sessions and children are encouraged to use this vocabulary in their recorded work and when they are verbally explaining their ideas. Any classroom displays incorporate key vocabulary and questions.

Information and Communication Technology
Teachers should use their judgement about when ICT tools should be used, including the use of calculators.

Role of the Subject Leader
- Ensures teachers understand the requirements of the National Curriculum and leads by example by setting high standards of planning and teaching.
- Prepares, organises and leads CPD and joint professional development.
- Works with the SENCO and SLT.
- Creates the Maths Action Plan and monitors its ongoing implementation.
- Leads the Maths subject team.
- Observes colleagues with a view to identifying good practice to be shared and any support requested/required.
- Discusses regularly with the Headteacher and the mathematics governor the progress of implementing National Curriculum for Mathematics in school.
- Monitors and evaluates mathematics provision in the school by conducting regular work scrutiny, learning walks and assessment data analysis.
- Moderating and review - moderating of the standards of children's work and of the quality teaching in mathematics is the responsibility of the mathematics subject leader alongside members of the senior leadership team. The work of the mathematics subject leader also involves supporting colleagues in the teaching of mathematics, being informed about current developments in the subject, and providing a strategic lead and direction for the subject in the school.

Parental Involvement / Homework
At Park, we encourage parents to support children to ensure any maths homework is completed. We focus on children learning times tables as quickly as possible reaching secure knowledge by the end of Year 4. Times tables is the primary focus of homework and we ask parents to help children learn their tables to assist with fluency in other areas of the mathematics curriculum. Homework may also be set from other areas of the mathematics curriculum where appropriate.