

Keston Primary School



Mathematics Policy 2017

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Our Philosophy

The new National Curriculum states that:

“Mathematics is a creative and highly inter-connected 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 firms of employment. A high-quality mathematics education therefore provides a foundation for understanding the world, the ability to reason mathematically, an appreciation of the beauty and power of mathematics, and a sense of enjoyment and curiosity about the subject.”

At Keston Primary School we view maths as a multi-discipline, interconnected subject which could encourage creativity and curiosity about maths around us. We want the children to see Mathematics as being relevant to their world and applicable to everyday life as well as being something that they will need as they move on through their school life and ultimately to the world of employment. To that end, a high-quality, inter-related and creative Maths experience should be one that develops the children’s ability to think mathematically and one which allows them to apply the tools to which they have been exposed in a variety of ways.

Following the introduction of the new National Curriculum in 2014 the emphasis has been to ensure that all children:

- become **fluent** in the fundamentals of mathematics, including through 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 problems.

This means that children need to be regularly exposed to opportunities involving increasingly complex problem solving which allows them to apply their Maths knowledge. In doing so they should be encouraged to develop an argument and line of enquiry which they can prove and justify using mathematical vocabulary. This includes the ability to break down problems, both routine and non-routine, into a series of steps.

Aims and Objectives

- To promote enjoyment and enthusiasm for learning through practical activity, exploration and discussion.
- To encourage children to appreciate and enjoy mathematics and study it positively, with confidence and a sense of achievement.
- To promote confidence and competence with number and the number system.
- To promote mathematics as a whole process, rather than a separate area.
- To understand the importance of mathematics in everyday life.

Objectives

- To ensure the delivery of Maths is filled with discussion, models and images and practical activity.
- To promote the concept that acquiring mathematics knowledge and skills provides the foundation for understanding the world around the children.
- To develop mental strategies and improve times table knowledge to help access all areas of mathematics.
- To encourage children to use mathematical vocabulary to reason and explain their mathematical thinking.
- To challenge children to stretch themselves and take risks in their learning using Keston’s learning skills.

- To encourage children to seek patterns and make links between all areas of maths by providing reasoning activities.

Teaching and Learning

The school use a variety of learning and teaching styles in mathematics lessons. We do this through a daily lesson and each lesson may take a different format dependent on the topic area or children's abilities. Some lessons will have a high proportion of whole class and group teaching, this may be where children are first introduced to a new topic, an open ended investigative lesson or going over an area children found hard.

Other lessons may involve groups of children being taught throughout a lesson using assessments from the day before. For example, some children who have mastered a topic will be challenged with an activity that masters the subject to move their learning on whilst those who may not have understood will revisit it so ensure it is embedded. By teaching different groups of children based on their particular needs and abilities, we ensure that children are receiving personal learning and encourage independence from all. Children are expected to challenge themselves consistently and use the Keston Learning Skills to work independently or collaboratively.

Throughout all mathematic lessons, we encourage children to ask as well as answer mathematical questions and encourage 'why' questions to challenge their thinking. They have the opportunity to use a wide range of practical resources to support their work and mathematical dictionaries are available. Children use ICT in mathematical lessons where it will enhance their learning, as in modelling ideas and methods.

In all classes there are children of differing mathematical ability. In years four- six children are set into ability groups where their need is targeted more specifically. Whether in a set or whole class, we provide suitable opportunities for all children by matching the challenge of the task to the ability of the child. We achieve this through a range of strategies – in some lessons through differentiated group work and in other lessons by organising the children to work in pairs or individually on open ended problems or games. Teachers use a range of models and images to support learning for visual learners and help children understand concepts.

Classroom assistants to support some children and to ensure that work is matched to the needs of individuals.

Mathematics Curriculum Planning

Mathematics is a core subject in the National Curriculum and all our planning is based on the National Curriculum objectives set out for each year group. We carry out the curriculum planning in mathematics in two phases, medium and short term plans. The National Curriculum objectives gives an overview of what to teach throughout the year and we derive our medium term plans from these. We ensure all topics are covered and revisited throughout the year to ensure progression and mastery.

It is the class teachers, working with year group colleagues, who complete the weekly plans for the teaching of mathematics. These weekly plans list the specific learning objectives for each lesson and give details of how the lessons are to be taught. These plans are shared with classroom assistants and are monitored by the maths co coordinator.

Mathematics plans are flexible based on the children's strengths and weaknesses on certain subject, a pre assessment may be done to show the class teacher the specific needs of the class. Class teachers will react to the needs of the class on a daily basis in order to move the learning on most efficiently.

Reasoning and mastery.

As the National Curriculum states, one of the key areas of mathematics is for children to reason. At Keston, staff have had a lot of training on how to provide reasoning opportunities for children. For example, providing questions on the same subject area in a variety of formats including worded problems and open ended high level questions that encourage children to make links between maths learning. We encourage

children to master a subject, which means that they are able to apply their knowledge of it to different questions. In order for children to achieve mastery, they need to be provided with different approaches to the subject area and develop their understanding of it by making generalisations and spotting patterns.

Marking

Marking of children's work is essential to ensure they make further progress and is marked against a success criteria.

Children are encouraged to self-assess their work and given time to read teachers' comments and make corrections in order to progress in their learning. Children will be given a gap task to complete which can embed, reinforce, scaffold or challenge children's learning. The marking of maths is in line with our school policy, please see the marking policy for further information.

Early Years

We teach mathematics in our nursery and reception classes. The mathematical aspects of the children's work are related to the objectives set out in the Early Learning Goals, which underpin the curriculum planning for children aged three to five. We give all the children ample opportunity to develop their understanding of number, measurement, pattern, shape and space through varied activities that allow them to enjoy, explore, practice and talk confidently about mathematics.

Key Stage One Organisation

Children in KS1 are taught Mathematics for approximately 1 hour daily in mixed ability class groups.

Children in Years 3, 4, 5 and 6 are taught Mathematics in mixed ability class groups and are taught for approximately 1 hour daily. • At the beginning of each Mathematics lesson all children undertake an Oral/Mental Starter activity. • Maths Meetings are used outside of the main lesson to handle misconceptions and refresh pupils on concepts already covered earlier in the year. These should be no more than 10 minutes and are for consolidation and not to teach new content.

Key Stage Two Organisation

Children in Year 3 are taught Mathematics in a mixed ability class and are taught for approximately 1 hour daily.

Children in Years 4,5,6 are streamed into two sets in order for the teacher to focus directly on the needs of the children in the class. Streaming allows less range within a class and for teaching to be specific to the classes needs, for example allowing some children to grasp basic mathematical skills whilst some master and explore concepts. Teaching assistants will support the set that needs the most help.

In Key Stage Two there is allocated time of 30 minutes per week to enhance basic mathematical skills such as times tables, written arithmetic and basic maths facts. These skills are also taught in Maths Stars, a programme of tiered tests which allow children to learn mathematical facts and move forward through to different levels. It is often completed in swimming time and children are given time to reflect and learn on their mistakes ready to start a new one.

Inclusion

In line with the School's Inclusion Policy each child will have an equal entitlement to all aspects of the Maths curriculum and to experience the full range of Maths activities. Therefore, in delivering Maths, care will be taken to ensure that a variety of learning styles are accessed and teaching methods adopted. All support children need takes place within the classroom and may be delivered by the teacher or teaching assistant and may involve individual or small group work.

Equal Opportunities

All teaching and non-teaching staff at Keston Primary School is responsible for ensuring that all children, irrespective of gender, ability, ethnic origin and social circumstances, have access to the whole curriculum and make the greatest possible progress. (See Whole School Policy on Equal Opportunities.)

Assessment and Recording

The children are regularly assessed informally during lessons by:

- Observations of a child or group on task
- Asking relevant questions
- Discussion with children about their work
- Work in books
- Children's own evaluation of their work

From this assessment the teacher is able to influence learning (AfL) by evaluating and changing work according to the child's needs. Next steps are given through verbal dialogue or gap tasks. It can be used informatively in future planning and provide summative information. In turn this is reported to parents. Assessing pupil progress (APP) is embedded and provides evidence for year group and whole school monitoring and in pupil progress meetings with the Senior Leadership Team (SLT.)

Teachers also review learning through test as necessary. Summative assessment occurs termly in the upper school. A variety of SATs optional, SATs tests and Rising Star assessments are used and provide a clear indication of the child's progress and needs. The information is stored on class tracking sheets (target tracker) and analysis of outcomes is used to inform the next stage of planning.

Monitoring and Evaluation

Maintenance monitoring of planning, coverage and assessment will continue to take place, as will a regular audit and update of resources. As a result of regular monitoring, issues that arise will be fed back to the SLT/ Headteacher via the Action Plan with strengths and weaknesses in the subject and an indication of areas for further development. This will also be where new initiatives/ developments are highlighted.

Learning Environment

Each classroom has a working wall which reflects the current topics the class are learning that week. It may have visual aids on to support learning to help children, for example methods of how to achieve whatever they are learning, interactive challenges and examples of children's work.

There will also be evidence of times tables and maths facts to act as reminders to children to refer to throughout the year.

Role of Parents and Carers

It is important that parents and carers are actively involved in the children's education. Children's maths homework is in line with what the class are learning and when appropriate provide examples of how to answer. In order to help keep parents and carers informed of what is happening within school, there are half termly newsletters which are emailed out or available on our school website so parents know the areas of maths that are being covered. Parents and carers can be encouraged to support their children with their homework and use the calculation policy for guidance. There is also a homework club which is ran for children who might need extra support.

Calculation Policy

Please refer to our Calculation Policy which can be found on our website.

Subject Leader

The role of the Subject Leader is to provide professional leadership and management in Mathematics in order to secure high quality teaching, effective use of resources and high standards of learning and achievement for all pupils.

They will achieve this by affecting the following key areas:

- Strategic direction and development; learning and teaching (including planning and marking and presentation);

- Leading and managing staff; and efficient and effective deployment of staff and resources

- The Subject Leader will train and coach staff on Mathematical pedagogy within the school and keep up to date with developments from a county and national level.

- The Subject Leader has regular discussions with the Head Teacher and other senior leaders about learning and teaching in Mathematics and provides data and a subject overview of the strengths and weaknesses of Keston Primary School.