

Keston Primary School



Mathematics Policy

Spring 2010

Rationale

Mathematics provides a means of communication which is powerful, concise and unambiguous. It develops the ability to identify problems and draw a number of strategies and approaches to solve problems. It develops powers of logical thinking, accuracy and spatial awareness. Mathematics teaches us how to make sense of the world around us through developing a child's ability to calculate, to reason and to solve problems. It enables children to understand and appreciate relationships and pattern 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.

Mathematics at Keston Primary School will be taught in accordance to the learning and teaching policy. The Mathematics policy within which all staff work, gives guidance on planning, teaching and assessment. The policy should be read in conjunction with the scheme of work for Mathematics, the National Curriculum for Mathematics and the Revised Primary Strategy.

Aims

- 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 enable each child to develop within their capabilities, mathematical skills and understanding required to meet and enjoy the needs of the real world.
- To promote confidence and competence with number and the number system.
- To achieve a high standard in numeracy and a range of other skills.
- To develop the ability in children to use mathematical language effectively for practical communication.
- 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 understand the importance of mathematics in everyday life.
- To promote mathematics as a whole process, rather than a separate area.
- To promote the use of technology to further develop mathematical skills.

Objectives

- To develop and practice children's mathematical skills and to build up a knowledge of basic mathematical facts.
- To develop an enquiring approach to mathematics and an appreciation of mathematical thinking by use of problem solving and investigational materials.
- To encourage children to seek pattern and links when problem solving, so that they can use skills of deduction, hypothesis and self checking in their work.
- To encourage mental ability
- To develop basic skill and knowledge of calculators and computers so that use can be made of them as appropriate in all aspects of mathematical ability.
- To encourage children to take responsibility and pride in their work at all stages, i.e. discussion, activity, recording.

- To encourage children to apply their mathematical skills and knowledge in other areas of the curriculum and in everyday contexts.
- To encourage the children to communicate clearly in oral and written maths.

Skills

- Use and understand number, estimate, approximate and interpret results.
- Use and recognise symbolic and graphical representation to express relationships.
- Use and recognise the properties of 2D and 3D shapes and use measurement, location and transformation in the study of space.
- Collect, process and interpret data, understand and find probabilities.

Through these processes the following skills are developed:

- Synthesising combining ideas to make a whole, putting the problem back together.
- Evaluating deciding how well it went – was the problem solved?
- Specialising manipulating with specific examples/looking for patterns.
- Generalising focusing on features common to examples given
- Conjecturing attempts to express the generalisation.
- Verifying demonstrate why a conjecture is valid.
- Rationalising using logic to investigate a problem.
- Applying situations using concepts/skills learned in other/real life.

Learning and teaching

The school use a variety of learning and teaching styles in mathematics lessons. We do this through a daily lesson that has a high proportion of whole class and group direct teaching. During the lesson we encourage children to ask as well as answer mathematical questions. They have the opportunity to use a wide range of practical resources to support their work. Mathematical dictionaries are available. Children use ICT in mathematical lessons where it will enhance their learning, as in modelling ideas and methods. Wherever possible, we encourage children to use and apply their learning in everyday situations.

In all classes there are children of differing mathematical ability. We recognise this fact and 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. We use 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 we use the Revised Primary Strategy as the basis for implementing the statutory requirements of the programme of study for mathematics.

We carry out the curriculum planning in mathematics in three phases, long, medium and short term. The Revised Primary Strategy for teaching mathematics gives a detailed

outline of what we teach in the long term and medium term plans are derived from here. These are dovetailed to include the requirements of the National Curriculum.

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 given to the maths coordinators.

Foundation Stage

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.

Links With Other Areas Of the Curriculum

Although Mathematics is taught as a subject in its own right it is also taught in a cross curricular way and contributes to a range of other subjects across the curriculum.

- English

Mathematics contributes significantly to the teaching of English by actively promoting the skills of reading, writing, speaking and listening. For example we encourage children to read and interpret problems in order to identify the mathematics involved. The children explain and present their work to others during plenary sessions. Younger children enjoy stories and rhymes that rely on counting and sequencing. Older children encounter mathematical vocabulary, graphs and charts when using non-fiction texts. Children learn through talk, verbalisation of learning indicates understanding. Generalising both verbally or in writing is an essential part of problem solving and investigation work. Children are encouraged to listen to others, reflect on what has been said and respond accordingly.

- Information and communication technology (ICT)

Children use and apply mathematics in a variety of ways when solving problems using ICT. Younger children use ICT 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, such as tessellations. When working on control, children use standards and non standard measures for distance and angle. They use simulations to identify patterns and relationships.

- Science

Mathematics makes a significant contribution to the learning and teaching in science. Many of the skills taught in both subjects overlap or complement each other. Children use a range of problem solving strategies in their investigations in science. They use a lot of data handling, creating tables, charts and graphs and number skills when recording and presenting their work.

- Personal, social, citizenship and health education

The work that children do outside their normal lessons encourage independent study and helps them to become increasingly responsible for their own learning. The planned activities that children do within the classroom encourage them to work together and

respect each other's views. We present children with real life situations in their work e.g. the spending of money.

- 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 together, and we give them opportunities to discuss their ideas and results. Many areas of mathematics are derived from different cultures and these are valued.

Inclusion

At Keston Primary we value each person as a unique individual. We strive to meet the mathematical needs of all our children, adults and all members of the school community.

All children should access to a broad, balanced curriculum, which includes mathematics and make progress at their own pace. Provision for children with SEN or G&T in relation to mathematics is the responsibility of the class teacher, support staff and SEN coordinator or G&T coordinator as appropriate. At Keston specific children are identified from SEN to G&T to be targeted. Children giving course for concern follow an intervention program, implemented by SEN teachers.

In the classroom, work is differentiated according to the child's needs and takes into account the targets set for individual children in their Individual Education Plans (IEPs.)

Equal Opportunities

All teaching and non teaching staff at Keston Primary School are 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.)

Every Child Matters (DFES 2004)

The teaching of mathematics encourages children to enjoy and achieve in mathematics. There is a "personalised approach to pupils learning to help them to reach the highest possible standards." Parents and carers are "encouraged to engage as partners in their children's learning." Information books are sent home outlining the learning which will take place in each year group. Mathematics homework is set on a regular basis throughout the school. Targets for individual children are set and shared with parents at parents evenings and in the annual written report. Children are prepared from nursery through to their entry to secondary school, for the next stage of their education

Assessment and Recording

The children are regularly assessed informally during lessons by:

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

From these informal assessments the teacher is able to evaluate and change work according to the child's needs; inform future planning; provide summative information and inform the parents.

Teachers also review learning through test as necessary; usually at the end of each half term work. Summative assessment occurs at the end of each term in the upper school. A variety of SATs optional, SATs tests and NEFR assessments are used and provide a clear indication of the child's progress and needs. The information is stored on class tracking sheets and analysis of outcomes are 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.

Coordinators will continue to attend relevant courses and update staff.

The numeracy governor (Mr Paul Lange) liaises with the coordinators and reports to the full Governing Body.