Eastcroft Park Primary School

Mathematics Policy
**Introduction:**
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 in most forms of employment. A high-quality mathematics education therefore provides a foundation for understanding the world, the ability to reason mathematically, and a sense of enjoyment and curiosity about the subject.
This revised policy takes into account the new National Curriculum (2014)

**Purpose:**
The purpose of this policy is to describe our practice in Mathematics and the principles upon which this is based.

**Aim(s):**
We aim to develop lively, enquiring minds encouraging pupils to become self motivated, confident and capable in order to solve problems that will become an integral part of their future.
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 have conceptual understanding and are able to recall and apply their knowledge rapidly and accurately to problems
- **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.

**Children deserve:**

- To be set appropriate learning challenges
- To be taught well and be given the opportunity to learn in ways that maximise the chances of success.
- To have adults working with them to tackle the specific barriers to progress they face.
Programme of Study:

**Foundation Stage**
The programme of study for the Foundation stage is set out in the EYFS Framework. Mathematics involves providing children with opportunities to develop and improve their skills in counting; understanding and using numbers; calculating simple addition and subtraction problems; and to describe shape, spaces and measures.

**Key Stage 1 and 2**
The Programmes of study for mathematics are set out year by year for Key Stages 1 and 2 in the new National Curriculum (2014). The programmes of study are organised in a distinct sequence and structured into separate domains. Pupils should make connections across mathematical ideas to develop fluency, mathematical reasoning and competence in solving increasingly sophisticated problems. By the end of each key stage, pupils are expected to know, apply and understand the matters, skills and processes specified in the relevant programme of study.

**Key Stage 1**
The principal focus of mathematics teaching in Key Stage 1 is to ensure that pupils develop confidence and mental fluency with whole numbers, counting and place value. This should involve working with numerals, words and the four operations; including with practical resources (e.g. concrete objects and measuring tools). At this stage, pupils should develop their ability to recognise, describe, draw, compare and sort different shapes and use the related vocabulary. Teaching should also involve using a range of measures to describe and compare different quantities such as length, mass, capacity/volume, time and money. Pupils should read and spell mathematical vocabulary, at a level consistent with their increasing word reading and spelling knowledge at Key Stage 1.

**Lower Key Stage 2**
The principal focus of mathematics teaching in lower Key Stage 2 is to ensure that pupils become increasingly fluent with whole numbers and the four operations, including number facts and the concept of place value. This should ensure that pupils develop efficient written and mental methods and perform calculations accurately with increasingly large whole numbers. At this stage, pupils should develop their ability to solve a range of problems, including with simple fractions and decimal place value. Teaching should also ensure that pupils draw with increasing accuracy and develop mathematical reasoning so they can analyse shapes and their properties, and confidently describe the relationships between them. It should ensure that they can use measuring instruments with accuracy and make connections between measure and number.

By the end of Year 4, pupils should have memorised their multiplication tables up to and including the 12 multiplication table and show precision and fluency in their
Pupils should read and spell mathematical vocabulary correctly and confidently, using their growing word reading knowledge and their knowledge of spelling.

**Upper Key Stage 2**
The principal focus of mathematics teaching in upper Key Stage 2 is to ensure that pupils extend their understanding of the number system and place value to include larger integers. This should develop the connections that pupils make between multiplication and division with fractions, decimals, percentages and ratio. At this stage, pupils should develop their ability to solve a wider range of problems, including increasingly complex properties of numbers and arithmetic, and problems demanding efficient written and mental methods of calculation. With this foundation in arithmetic, pupils are introduced to the language of algebra as a means for solving a variety of problems. Teaching in geometry and measures should consolidate and extend knowledge developed in number. Teaching should also ensure that pupils classify shapes with increasingly complex geometric properties and that they learn the vocabulary they need to describe them. By the end of Year 6, pupils should be fluent in written methods for all four operations, including long multiplication and division, and in working with fractions, decimals and percentages. Pupils should read, spell and pronounce mathematical vocabulary correctly.

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**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 plenary 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 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 older children with real-life situations in their mathematics work on 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, therefore ensuring that the fundamental aspects of community cohesion are developed. We
group children so that they work together so as to develop the essential skills relating to working with others and communication by discussing their ideas, strategies and results. The study of famous mathematicians around the world contributes to the cultural development of our children.

**Cross Curriculum**
Throughout the whole curriculum, opportunities to extend and promote Mathematics should be sought. The application of number skill is further developed through topic areas where children are encouraged to identify and utilise the number skills that they would be required to use to achieve the outcomes necessary in the lesson. Our topics help to take advantage of the multi-cultural aspects of maths.

**Mathematics and ICT**
Information and communication technology enhances the teaching of mathematics significantly, because ICT is particularly useful for mathematical tasks. 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 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 can use both standard and non-standard measures for distance and angle. They can also use simulations to identify patterns and relationships. The introduction of I-pads within the school gives children access to a multitude of APPs which help further develop their mathematical understanding and the acquisition of mental calculation skills.

**Teaching and Learning:**
The approach to the teaching of mathematics within the school is based on:-

- **A mathematics lesson every day**
- **A clear focus on direct, instructional teaching and interactive oral work with both the whole class and smaller ability groups.**

The curriculum is delivered by class teachers. All work is differentiated in order to give appropriate levels of work and children are taught in ability groups. Planning is based upon the new National Curriculum (2014). Programmes of Study should inform medium term plans and subsequently weekly/daily planning. Class teachers are responsible for the relevant provision of their own classes and individually develop weekly/daily plans which give details of learning objectives and appropriate differentiated activities. Although planned in advance they are adjusted on a daily basis to better suit the arising needs of a class and individual pupils.

**Calculation Policy:**
The calculation policy (see separate policy) has been revised in light of the new National Curriculum.
Mathematics and Inclusion:

- At our Eastcroft Park we teach mathematics to all children, whatever their race, gender, or ability. 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 good progress. We strive hard to meet the needs of those pupils with special educational needs; those with disabilities; those with special gifts and talents and those learning English as an additional language, and we take all reasonable steps to achieve this. For further details see separate policies: Special Educational Needs; Gifted and Talented; English as an Additional Language (EAL).

- When progress falls significantly outside the expected range, the child may have special educational needs. 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. Assessment allows us to consider each child’s attainment and progress against expected stages. This ensures that our teaching is matched to the child’s needs.

- Intervention can lead to the creation of Personal Provision Plan (PPP) for children with special educational needs. The PPP may include, as appropriate, specific targets relating to mathematics.

- We enable all pupils to have access to the full range of activities involved in learning mathematics. Where children are to participate in activities outside the classroom we carry out a risk assessment prior to the activity, to ensure that the activity is safe and appropriate for all pupils.

- Children identified as gifted and talented are further challenged within maths lessons by being given alternative activities which enable them to develop their problem solving skills and further develops their mathematical understanding and reasoning in a manner more suitable to their need. Puzzle and problem boxes are available in each classroom and include various mathematical activities and challenges.

Resources:

- All classes are equipped with resources that can be used within daily mathematics lessons and children have access to a variety of resources on the help desk situated in each classroom. The library contains a number of books to support children’s individual research. A range of software and APPs is available to further support and help consolidate mathematical objectives.

- Resources which are not used or required regularly are stored centrally and accessed by teachers at the beginning of a topic.
Displays:
All classrooms must have a maths working wall that displays a range of vocabulary applicable to the age group being taught and reference to aspects of the current topic.

Assessment:

- Teachers will assess children’s work in mathematics from three aspects (long-term, medium-term and short-term). We use short-term assessments to help us adjust our daily plans. These short-term assessments are closely matched to the teaching objectives.

- We make medium-term assessments using stage appropriate tests to measure progress against the key objectives, and to help us plan the next unit of work.

- We make long-term assessments towards the end of the school year, and we use these to assess progress against school and national targets. We can then set targets for the next school year and make a summary of each child’s progress before discussing it with parents. We pass this information on to the next teacher at the end of the year, so that s/he can plan for the new school year. We make the long-term assessments with the help of stage appropriate tests and teacher assessments. We use the national tests for children in Year 2 and Year 6, plus the stage appropriate tests at the end of Years 1, 3, 4 and 5.

- The mathematics subject leader keeps samples of children’s work and assessment data in a portfolio. This demonstrates the expected level of achievement in mathematics in each year of the school.

- Children in the Foundation Stage are assessed in accordance with the EYFS curriculum.

Marking and Presentation:
Teachers are expected to adhere to the schools agreed marking policy when marking work and presentation policy when guiding children as to how to present their work.

Homework:
Homework is set on a weekly basis and is used to consolidate learning from the weekly objectives. Children are also expected to regularly learn and consolidate their times tables.

Monitoring and Evaluation:
The Curriculum leaders, alongside SLT, are responsible for monitoring and evaluating curriculum progress. This is done through book scrutiny, planning scrutiny, lesson observations, pupil interviews, staff discussions and audit of resources.

This policy will be reviewed every 2 years