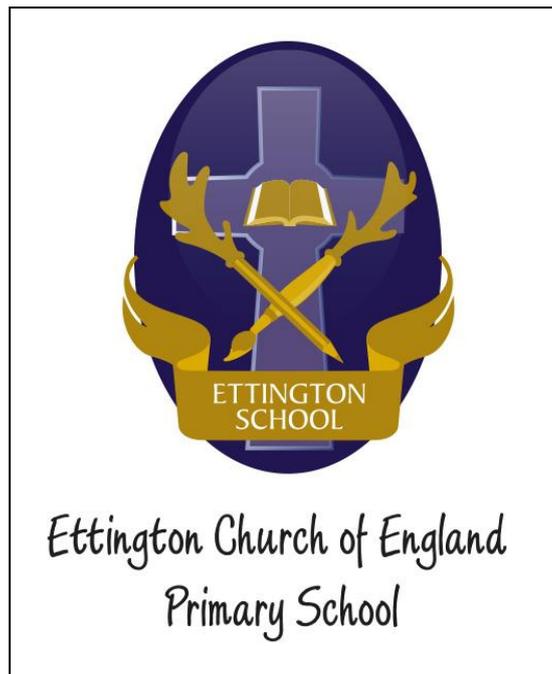


ETTINGTON CE PRIMARY SCHOOL



WHOLE SCHOOL POLICY FOR MATHEMATICS

Purpose (N.C. 2014)

At Ettington Primary school, we aim to provide a high quality mathematics education which *‘provides a foundation for understanding the world, the ability to reason mathematically, and a sense of excitement and curiosity about the subject.’* We believe that it is *‘essential to everyday life, critical to science, technology and engineering, and necessary in most forms of employment. Mathematics is a creative and highly inter-connected discipline that has been developed over centuries providing the solution to some of history’s most intractable problems. As pupils learn mathematics, they need to acquire fluency in procedures and develop a conceptual understanding if they are to be able to solve increasingly complex problems.’*

Aims

The National Curriculum for mathematics aims to ensure all pupils:

- become **fluent** in the fundamentals of mathematics so that they are efficient in using and selecting the appropriate written algorithms and mental methods, underpinned by mathematical concepts
- can **solve problems by** applying their mathematics to a variety of problems with increasing sophistication, including in unfamiliar contexts and to model real-life scenarios
- can **reason mathematically** by following a line of enquiry and develop and present a justification, argument or proof using mathematical language.

Fluency requires the quick and accurate mental recall of facts that pupils have learned up to that point; precision and confidence in using mathematical concepts, properties and symbols, and the competent and flexible selection and application of methods in different contexts. Solving problems requires analysing information presented in different forms, recognising what is given information and what additional information is needed; identifying and conjecturing patterns, relationships, and generalisations; testing, inducing, deducing, and proving; and communicating ideas effectively. Mathematical reasoning requires breaking down problems into a series of simpler problems or steps; making decisions about gathering, processing and calculating to acquire new information; and showing perseverance in finding solutions. The Programmes of Study are organised in a distinct sequence and structured into separate domains. However, mathematics is a highly inter-connected discipline. Pupils should therefore be taught to practise and then apply their mathematics to a range of problems. They should also be encouraged to make connections across mathematical procedures and concepts to ensure fluency, mathematical reasoning.

Spoken language

The National Curriculum for mathematics reflects the importance of spoken language in pupils’ development – linguistically, cognitively and socially – across the whole curriculum. The quality and variety of language that pupils hear and speak are key factors in developing their mathematical vocabulary and presenting a mathematical justification, argument or proof. They must be assisted in making their thinking clear to themselves as well as others and teachers should ensure pupils build secure foundations by using discussion to probe and remedy their misconceptions.

School curriculum

Each Programme of Study is set out year-by-year in mathematics. All maintained schools are only required to teach the Programme of Study by the end of each key stage. Within each key stage, maintained schools therefore have the flexibility to introduce content earlier or later than set out in the Programme of Study. In addition, schools can introduce key stage content during an earlier key stage if appropriate. All schools are also required to set out their school curriculum for mathematics on a yearly basis and make this available online.

Inclusion

Teachers should set high expectations for all pupils and should also be aware of the requirements of the equal opportunities legislation that covers gender, race and disability. A minority of pupils will have particular requirements that arise as a consequence of Special Educational Needs, disability or learning English as an additional language. Teachers must take account of these requirements and make provision, where necessary, to support this diverse group of pupils. During end of key stage assessments, teachers should bear in mind that special arrangements are available to support individual pupils.

Use of information and communication technology (ICT)

Teachers need to consider how ICT can best be used to support the teaching of mathematics. Calculators should not be used as a substitute for pupils having poor written and mental arithmetic. Calculators should therefore only be introduced near the end of primary, and only for those pupils who are secure in written and mental arithmetic to allow them to explore more complex problems. In both primary and secondary, a wider range of new technology should be considered, including teaching through the use of the graphing, dynamic geometry, spread sheet and simulation software available. Many ICT tools allow pupils to use different mathematical representations (e.g. number, algebra, graphs) to aid conceptual development. As technology changes, teachers need to assess what the latest innovations offer in teaching mathematics.

Attainment Targets

By the end of each Key Stage, pupils are expected to have the knowledge, skills and understanding of the matters taught in the relevant Programme of Study.

Introduction

This policy reflects the values, practices and philosophy of Ettington Primary School in relation to teaching and learning mathematics. It gives a framework within which all staff, both teaching and non-teaching, work, and it gives guidance on planning, teaching and assessment.

School Aims

The aims of teaching mathematics at Ettington Primary are consistent with the National Curriculum Framework and Early Learning Goals. Our general aims for teaching mathematics are to develop:-

- *a positive attitude towards mathematics & an awareness of the fascination of mathematics*
- *competence and confidence in mathematical knowledge, concepts and skills*
- *an ability to solve problems, to reason, to think logically and to work systematically and accurately.*
- *initiative and an ability to work both independently and in cooperation with others*
- *an ability to communicate mathematics*
- *an ability to use and apply mathematics across the curriculum and in real life*
- *an understanding of mathematics through a process of enquiry and experiment*

Through careful planning and preparation we aim to ensure that throughout the school our children are given opportunities for:

- *practical activities and mathematical games*
- *problem solving*
- *individual, group and whole class discussions and activities*
- *open and closed tasks*
- *a range of methods of calculating e.g. mental, pencil and paper and using a calculator*
- *working with computers as a mathematical tool*

Equal Opportunities and Inclusion

All teaching and non-teaching staff at Ettington Primary School are responsible for ensuring that all pupils, irrespective of gender, ability, ethnicity and social circumstances, have access to the whole curriculum and opportunities to make the greatest progress possible in all areas of the curriculum while in our school.

All children in all classes have an equal opportunity to undertake all aspects of work in mathematics and equal access to mathematics based teaching and learning throughout any one school year. Within the daily mathematics lesson, teachers not only provide activities to support children who find mathematics difficult, but also activities that provide appropriate challenges for children who are high achievers in mathematics.

Inclusion is achieved through analysis and assessment of children's needs, by monitoring the quality of teaching and the standards of pupils' achievements, and by setting individual targets for improvement.

The progress of all children is regularly tracked throughout the year. Children identified as potentially falling behind or with SEN are 'screened' to measure key learning skills – and appropriate intervention strategies or teaching activities are organised. Children with SEN are taught within the daily mathematics lesson and are encouraged to take part when and where possible, (please see the section on differentiation). When additional support staff are available to support groups or individual children they work collaboratively with the class teacher.

Where applicable, children's SEND plans incorporate suitable intentions for developing mathematics and teachers keep these objectives in mind when planning work.

See also Policy on Special Educational Needs.

Children identified with high learning ability are identified and extended within the school.

We incorporate mathematics into a wide range of subjects across the curriculum. We take advantage of cross-curricular areas to enhance the teaching and learning of mathematics, e.g. ICT as a teaching/learning tool; multicultural aspects of mathematics; economic understanding (money etc.).

Differentiation

- This is incorporated into mathematics lessons and can be carried out in various ways:
- 'Stepped Activities' which become more difficult and demanding, but cater for the less able in the early sections.
- 'Common Tasks' which are open ended activities / investigations where differentiation is by outcome.
- 'Resourcing' which provides a variety of resources depending on abilities e.g. counters, cubes, 100 squares, number lines, mirrors.
- 'Grouping' according to ability so that the groups can be given different tasks when appropriate. Activities are based on the same theme and usually at no more than three levels.
- Groups identified as needing wave 2 intervention.
- Individuals needing wave 3 intervention or accelerated learning strategies.

Organisation of Mathematics Teaching and Learning

Each class teacher is responsible for the teaching of mathematics in their class, in consultation with, and with guidance from the mathematics coordinator.

- The approach to the teaching of mathematics within the school is based on three key principles:
- a mathematics lesson every day
- a clear focus on direct, instructional teaching and interactive oral work with the whole class and group
- an emphasis on facility with calculation

There is a syllabus which details the units followed by each class. Lessons are planned and evaluated by class teachers using a common planning format which are periodically monitored by the mathematics coordinator.

Mathematics in the Foundation Stage is taught in the following ways:

- Via continuous provision with a permanent mathematical area resourced with numerals; objects for counting/sorting/ordering; measuring tapes; scales; dice; game boards; books etc. This provision is enhanced with other resources to follow themes and the children's interests
- Within other areas of provision such as water and sand, equipment is designed to allow the exploration of capacity; size; volume, etc.
- Construction and brick play allow for the exploration of shape and space and bricks are stored in a way that develops sorting skills.
- Number lines and other associated mathematical displays are visible and regularly used to teach
- During child initiated play, adults incorporate regular opportunities for maths with tallying, scoring, cooking, etc.

Children in Key Stages 1 and 2 should also undertake some mathematical homework activities or tasks.

Mathematics will often be linked to work in other curriculum areas, in particular science, geography, design and technology, and ICT.

Mathematics based activity weeks are held each year. Guidance for these is issued by the subject coordinator.

A display board is kept up to date in each classroom. This may show examples of good work, teacher display materials or on-going work (working walls).

Assessment / Records / Reports

Assessment is built in to the syllabus. Published schemes as well as teacher's ongoing assessments are used to inform future work.

The quality of marking is crucial. A simple 'X' is of little assistance to a child unless accompanied by an indication of where the error occurred, together with an explanation of what went wrong.

Marking should be both diagnostic and summative, (for more detail see the School Assessment / Marking Policy).

Attainment from Teacher Assessments, unit tests and mid/end of year tests are recorded and used to produce a class tracking record for all pupils and are the basis for Pupil Progress discussions, analysis of groups and for performance management.

Statutory end of Key Stage tests are completed. Screening analysis and further diagnostic tests are available for children with SEN in mathematics.

Regular mentoring meetings with the children provide individual progress reports and sets new targets. Verbal reports are given to parents during parents' evenings.

Written reports are provided at the end of the year for all children.

Recognition of achievement

The assessment policy states that marking should involve positive comments and 'next step' statements.

Resources

There is a wide range of mathematics resources available for staff - some equipment is allocated specifically to a particular year group.

Opportunities to use ICT resources are built in to the schemes of work.

Monitoring and Evaluation

Monitoring and evaluation is carried out to enhance the teaching and learning of mathematics within Ettington Primary School. It is the responsibility of all staff, both teaching and non-teaching, to monitor and evaluate the curriculum provision made for mathematics within the school in order that pupils make the greatest possible progress. However, detailed evaluation is also undertaken by the mathematics coordinator, and the Headteacher, based on a schedule defined within the school's development plan and annual action plan.

Evaluation includes a regular evaluation of the content of the mathematics curriculum to ensure that National Curriculum requirements are being fulfilled. This involves reviewing the coverage of the programmes of study at each Key Stage.

Monitoring of teachers' planning is carried out to check if plans are actively put into action in the classroom.

Pupils' progress and performance is monitored and evaluated together with the standards achieved in mathematics work, taking account of factors which may influence this such as teaching methods, resources, schemes of work and accommodation. Classroom observations and book reviews are notified to staff in advance.

Evaluation and review of the policy for mathematics and schemes of work takes place on an annual basis. The coordinator considers any necessary changes or adaptations to the policy. These are then discussed and agreed by the whole staff before the policy document is amended. Throughout the year the whole staff are encouraged to feed back information and ideas to the coordinator. This may include comments as to how a particular unit is progressing and the work that children are undertaking, comments upon the availability and suitability of resources and any other relevant comments about the overall structure of the mathematics scheme of work.

The coordinator for mathematics provides a report on standards and progress made for mathematics to the link governor at least twice each year. A programme for meeting the link governor has been set.

Parental Involvement

At Ettington Primary School we encourage parents to be involved by:

- inviting parents into school twice yearly to discuss the progress of their child
- inviting parents into school in the summer term to discuss the yearly report
- inviting parents of Year 6 pupils to a meeting on supporting their children with SATs
- encouraging parents to help in classrooms
- holding workshops for parents focusing on areas of mathematics

Key Stage Performance Indicators

Performance Indicators, which are the criteria for success of the school's mathematics policy at Ettington Primary School are:

- At KS2 (NC EXPECTED and above)
- At KS1 (NC EXPECTED and above)
- children enjoy mathematics
- children talk confidently about what they are doing in mathematics

Mathematics Coordinator's role

The mathematics coordinator is responsible for leading the development of mathematics throughout the school. This includes:

- ensuring continuity and progression from year group to year group
- monitoring and evaluating children's progress and achievements
- providing all staff with guidelines and a scheme of work to show how aims are to be achieved and how the variety of all aspects of mathematics is to be taught
- advising on in-service training to staff where appropriate. This will be in line with the needs identified in the School Development Plan
- advising and supporting colleagues in the implementation and assessment of mathematics throughout the school
- requisition and maintenance of resources required for the teaching of mathematics
- devising appropriate record systems
- preparing a yearly action plan for mathematics development, consulting with the staff.

Further documents :

Written calculation guidelines

Mathematics recording guidelines

Mathematics Action Plan (produced annually).

Mathematics Medium and Short term planning.

Mathematics Assessment Grids