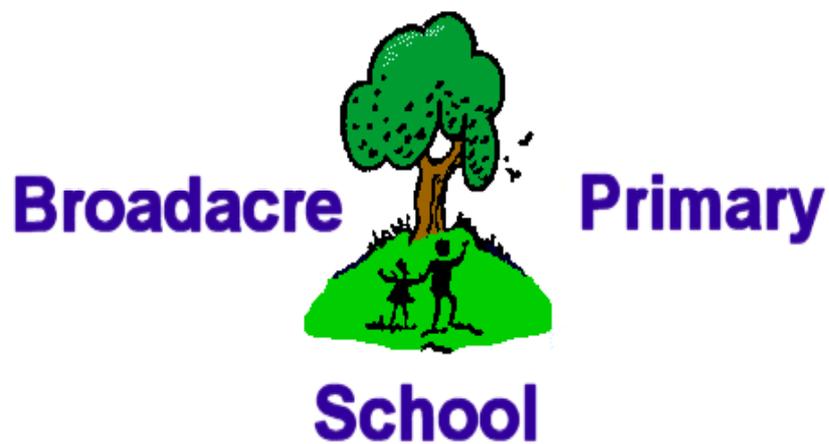


Broadacre Primary School



Mathematics Policy

The Policy will be reviewed annually by the subject leader for Mathematics.

Purpose of study

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 forms 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.

Aims

The National Curriculum for mathematics aims to ensure that all pupils:

- become **fluent** in the fundamentals of mathematics, through varied and 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 routine and non-routine problems with increasing sophistication, including breaking down problems into a series of simpler steps and persevering in seeking solutions.

Mathematics is an interconnected subject in which pupils need to be able to move fluently between representations of mathematical ideas. The programmes of study are, by necessity, organised into apparently distinct domains, but pupils should make rich connections across mathematical ideas to develop fluency, mathematical reasoning and competence in solving increasingly sophisticated problems. They should also apply their mathematical knowledge to science and other subjects.

The expectation is that the majority of pupils will move through the programmes of study at broadly the same pace. However, decisions about when to progress should always be based on the security of pupils' understanding and their readiness to progress to the next stage. Pupils who grasp concepts rapidly should be challenged through being offered rich and sophisticated problems before any acceleration through new content. Those who are not sufficiently fluent with earlier material should consolidate their understanding, including through additional practice, before moving on.

Information and communication technology (ICT)

Calculators should not be used as a substitute for good written and mental arithmetic. They should therefore only be introduced near the end of Key Stage 2 to support pupils' conceptual understanding and exploration of more complex number problems, if written and mental arithmetic are secure. In both primary and secondary schools, teachers should use their judgement about when ICT tools should be used.

Spoken language

The National Curriculum for mathematics reflects the importance of spoken language in pupils' development across the whole curriculum – cognitively, socially and linguistically. 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 that pupils build secure foundations by using discussion to probe and remedy their misconceptions.

School curriculum

The programmes of study for mathematics are set out year-by-year for Key Stages 1 and 2. Schools are, however, only required to teach the relevant programme of study by the end of the Key Stage. Within each Key Stage, 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 year-by-year basis and make this information available online.

Foundation Stage

Teachers in the Foundation Stage follow the Problem solving, Reasoning and Numeracy strand of the Early Years

Foundation Stage (EYFS) Framework. Children must be supported in developing their understanding of *Mathematics (Number and Shape, space and measure)* in a broad range of contexts in which they can explore, enjoy learn, practise and talk about their developing understanding. They must be provided with opportunities to practise and extend their skills in these areas and to gain confidence and competence in their use.

By the end of the EYFS, children should:-

- *Count from 1 to 20*
- *Order numbers and say one more or one less than a given number*
- *Add and subtract two single digits*
- *Count on or back to find a final number*
- *Solve problems including doubling, halving and sharing*
- *Talk about size, weight, capacity, position, distance, time and money.*
- *Compare quantities and objects*
- *Recognise, create and describe patterns*
- *Explore characteristics of everyday objects and shapes and use mathematical language to describe them.*

(EYFS Profile 2013)

Attainment targets

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.

Schools are not required by law to teach the example content in [square brackets] or the content indicated as being 'non-statutory'.

Key stage 1 – Years 1 and 2

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 [for example, 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.

By the end of Year 2, pupils should know the number bonds to 20 and be precise in using and understanding place value. An emphasis on practice at this early stage will aid fluency. 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 – Years 3 and 4

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 work.

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 – Years 5 and 6

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.

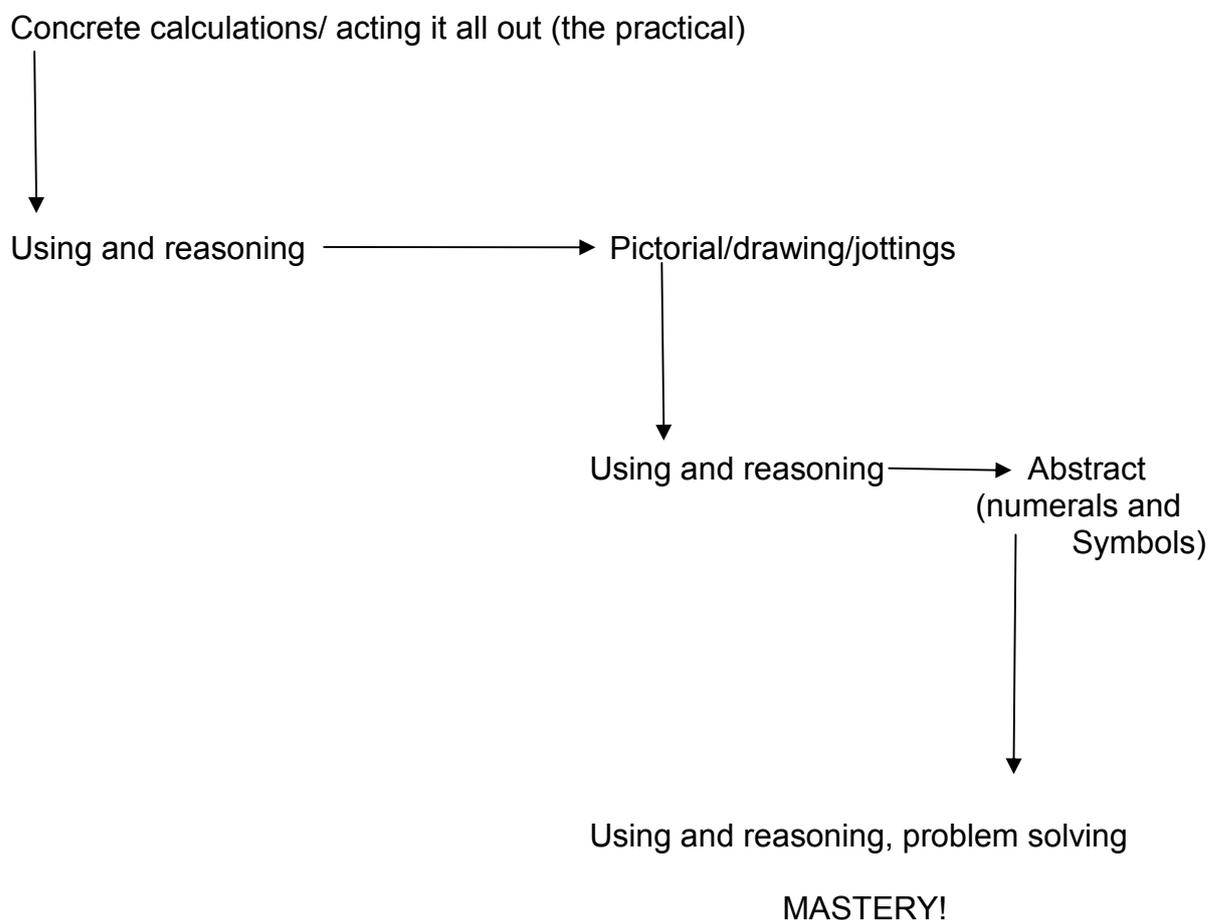
By the end of Year 6, pupils should be fluent in written methods for all four operations, including long multiplication and division, and in working with fractions, decimals and percentages. Pupils should read, spell and pronounce mathematical vocabulary correctly.

Planning & Assessment

Medium term plans are available on the school web site.

The weekly plan ensures all aspects of the subject are covered and that progression and continuity are included in this plan.

The process by which we assimilate/learning new skills and understanding in mathematics is outlined below. Planning should follow this flowchart to show the process. For some children it will happen quickly, for others it will need more time. Steps should not be missed out and careful questioning should be used to attain whether more of less time needs to be spent on each step.



Assessment documents should be used to identify the progress towards end of year expectations.

In line with the framework there will be a variety of approaches:

- Exposition by the teacher
- Discussion including 'Talk Project' techniques
- Guided maths
- Appropriate practical work and use of manipulatives
- Practice of fundamental skills
- Problem solving and the application of mathematics to everyday situations
- Investigation work
- Use of interactive teaching programmes and interactive whiteboard resources
- Intervention programmes to ensure pupil progress, representing mathematics in different representations.

Assessment/Reporting

Formative assessment will take part during lessons. Summative assessment will be made on teacher's short-term and medium term planning.

What kind of evidence is useful to provide?

The following is a comprehensive, but not exhaustive, list of possible evidence sources for moderation.

- Children's maths books
- Annotations to planning
- Personal records/ comment book
- Marking comments
- Photographs and post it notes – Teacher/TA
- Photocopy of a particular piece of work/whiteboard activity
- Tracking sheets
- Whole school tracking information

In the Foundation Stage a child's progress is recorded using the EYFS Profile 2012.

Presently formal assessment of Mathematics takes place in Y2 – KS1 SATs and in Y6 – KS2 SATs.

Progress in Mathematics will be communicated to the Parents during the termly Parents consultation evenings and annual report produced in the summer term.

Quality of Teaching Evidence

Discussions with pupils about their work: Class teacher

Analysis of school tracking/data: Teams/Phase Leader/SLT

Book Scrutiny: Mathematics Subject Leader/SLT/Staff moderation meeting

Parents Views: Parents Consultation events

Formal Observation of teaching

Calculation Policy

There is a separate policy for the teaching of calculations.

Cross curricular issues

Mathematics gives tremendous scope for cross-curricular activities occurring in every subject at some point. The use of mathematics as an everyday tool can be emphasised through these aspects. Cross curricular links will be recorded on teacher's weekly and mid-term planning across all subjects if appropriate.

Equal Opportunities and Inclusion

All children are regarded as having equal worth and importance irrespective of their gender, race, culture, learning abilities, sensory or physical impairment social class or lifestyle. This policy is written in line with Broadacre Primary School's Accessibility and Equality Plans.

Differentiation and SEND

Teachers set suitable learning challenges and targets for all children, differentiated and providing support where possible. Gifted and talented children will be identified by the class teacher and extended through differentiation and intervention/booster groups where resources allow. Children will be reviewed on a termly basis and an overall record kept by the More Able Gifted and Talented Coordinator.

Children with SEN will be identified initially by the class teacher and support provided in line with School Policy which may include additional classroom support or the formation of an IEP for children requiring SEN support.

ICT

Software to support the children's development and progression in mathematics is available on the school's network. Software can be used to consolidate and reinforce mathematic objectives and to meet combined ICT/mathematic objectives.

Whole School Action Planning

Links are made between maths planning and whole school action plan (includes timescale and criteria for success).

Resources

Resources are the responsibility of the subject leader. An audit will take place each year and needs identified. Each classroom will have a quantity of basic equipment; the remainder will be allocated according to topic focus. The budget is accessed and allocated in line with the School development plan. INSET needs are identified and implemented.

L.Ellerington 2015