

BARTLEY CE JUNIOR SCHOOL

'Think for yourself, act for each other'

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 for financial literacy and most forms of employment. A high-quality mathematics education therefore equips learners with a uniquely powerful set of tools to understand and change the world. These tools include the ability to reason both mathematically and logically, problem solving skills and the ability to think in abstract ways. Additionally, a high quality mathematics education will provide a foundation for an appreciation of the beauty and power of mathematics as well as a sense of enjoyment and curiosity about the subject.

In keeping with this, this document provides a statement of the aims, principles and strategies for the teaching and learning of Mathematics at Bartley Church of England Junior School.

OUR AIMS

Our aim is to inspire enjoyment, confidence and a deeper understanding of the wonders of mathematics and its applications in everyday life and beyond. We strive to provide engaging and appropriately challenging tasks to develop their fluency, reasoning and problem solving skills through a variety of rich tasks whilst exposing learners to a variety of ways of thinking.

PRINCIPLES BEHIND THE TEACHING AND LEARNING OF MATHEMATICS

Mathematics is important because:

- it is a skill that is used in everyday situations as well as in the workplace;
- it is a powerful tool for the communication of ideas as well as prediction and verification of results;
- it is an enjoyable, intellectually challenging and an aesthetic pursuit.

Mathematics is a core subject within the National Curriculum. The fundamental skills, knowledge and concepts are set out in the following domains:

- Number;
- Calculation - addition and subtraction, multiplication and division, fractions (including decimals and percentages, and in Year 6, ratio and proportion);
- Measurement;
- Shape;
- Statistics.

Our approach to teaching mathematics emphasises the need to develop increasingly efficient approaches for calculating and solving problems of growing complexity based upon a secure understanding of numbers and the number system in addition to the other fundamentals of maths, as described in the domains outlined above. We achieve this through:

- a dedicated mathematics lesson and additional fluency (Maths Meeting) session each day
- pre-learning opportunities where children's prior knowledge and understanding has demonstrated a need
- direct teaching and interactive work with the whole class
- an emphasis on mental strategies and fact recall based on secure conceptual understanding
- logically sequenced phases within longer units
- tasks planned with equity in mind, ensuring tasks are adapted or modified to meet the individual needs of learners
- daily emphasis on the development of reasoning skills (actual and communication of)
- a whole-school agreed progression of calculation strategies
- celebration of 'intelligent failure' as learning opportunities, encouraging a positive mindset and openness to new challenges and experiences
- teachers reinforcing an expectation that all pupils are capable of achieving high standards in mathematics.

Finally, we do not group or set learners by 'ability' as this does not fit our 'growth mindset' ethos. Instead, learners sit in mixed attainment groups for the majority of lessons. Our priority is to meet learners' needs within the lesson (rather than after) through timely intervention in the form of cutaways. However, on occasion, learners may be supported through additional 'same day' intervention work or reorganised into groups in response to assessment of the outcomes of a lesson where it is clear that they would benefit from further focussed intervention in the following session(s).

CURRICULUM DESIGN

Our mathematics curriculum reflects the key skills and guidelines set out in the National Curriculum (September 2013).

A detailed, structured curriculum is mapped out across all year groups, ensuring continuity and supporting transition. Effective mastery curricula in mathematics are designed in relatively small carefully sequenced steps, which must each be mastered before learners move to the next stage. Fundamental skills and knowledge are secured first. This often entails focusing on curriculum content in considerable depth at early stages.

Whilst mathematics is taught daily as a discrete subject, cross-curricular links are strongly encouraged, where appropriate.

SUPPORT AND ENRICHMENT

We teach mathematics to whole classes whilst being careful not to make assumptions of learners by 'ability' grouping them. Our philosophy is one of equity rather than equality,

recognising that teaching for mastery is not a 'one size fits all' approach. As a result, we promote equal outcomes instead of equal treatment. At the planning stage, teachers consider modifications or adaptations which may be required should learners struggle to grasp concepts and, for those who grasp concepts quickly within a lesson, the teachers plan greater depth tasks to challenge and deepen the learners' understanding further rather than simply accelerating to new content.

Equal access to the curriculum as well as targeting of individuals' needs is ensured in accordance with our Teaching, Learning and Equal Opportunities policies. Further guidance can also be found in the 'Able, Gifted and Talented Child' policy.

SPECIAL NEEDS

Where appropriate, we involve SEND learners as much as possible in the whole class journey. However, we recognise that this is not always appropriate and, where they require a different or divergent journey and resources, this also planned within the main theme of learning. Often they will also complete additional activities outside of the mathematics lesson, including through pre-learning opportunities. These are planned in response to careful evaluation of each learner's needs (e.g. through pupil interviews). These are organised and timetabled within year groups or in conjunction with the SENCo.

Further guidance can be found in the Special Needs policy.

SOCIAL, MORAL, SPIRITUAL AND CULTURAL (SMSC)

Learners are given opportunities to develop awareness of these aspects through activities such as real life problem solving as well as through the contextual framework of a unit of work e.g. learning about famous mathematicians, art and the role of different cultures in shaping our understanding of mathematics.

PLANNING

In order to address the aims of the National Curriculum, our long/medium term plans allow longer on topics. We are very proud to be using the Singapore-style Maths No Problem materials to support this approach to the teaching and learning of mathematics (more information about this - including supporting videos - are available on our website). Each lesson develops the concept from the previous one in logically sequenced phases in order to promote enhanced progress and understanding.

Some key points:

- Planning (and adaptation) in mathematics is a process in which all teachers are involved.
- Progression and continuity is ensured through the use of the National Curriculum and the school's progression in calculation documents (linked to the Maths No Problem scheme of work).
- Mid term plans are a working document and class teachers evaluate learning objectives within each unit to decide if and how objectives need further practise or development.
- Short term planning is carried out by each year team and class teachers. Provision is planned for at this stage to consider and meet individual's needs. Formative

assessment within the lesson then guides the next stage of learning for each learner and planning is annotated and adapted accordingly.

Further detail about the school's mastery approach can be found in our 'Maths Story' document, available on the school website and in school (by request).

ASSESSMENT

Our assessment procedures recognise that the aims of the curriculum cannot be assessed through coverage (ticking many objectives off a list) but through depth within a topic.

Assessment in Mathematics is carried out according to the aims and principles set out in the Assessment, Recording and Reporting policy.

- Formative assessment is on going in classes at all times and informs direction and support within lessons as well as future lessons.
- Summative assessment is carried out throughout the school in a number of ways:
 - Half termly assessments based on the objectives taught during that half term.
 - Autumn and Summer tests – NfER tests in year 3, 4, 5 and SATs in year 6.

These tools are used to ascertain progress and value added data across the school. This is carried out via Cohort Tracking and this in turn informs Year Group Action Plans and target children.

Children identified as making below expected progress have additional support strategies planned through pupil progress meetings.

CALCULATION SUPPORT

Our formal calculation policy can be located on our website. These documents are used by teaching staff throughout the school and offer guidance for the calculation strategies that are being taught within each year group. As a school we believe that all learners, when introduced to a key new concept, should have the opportunity to build competency in this topic by using the CPA approach (Concrete, Pictorial, Abstract).

- **Concrete** – learners use concrete objects and manipulatives to help them understand what they are doing.
- **Pictorial** – learners then build on this concrete approach by using pictorial representations, including multiple representations. These representations can then be used to reason and solve problems.
- **Abstract** – with the foundations firmly laid, learners should be able to move to an abstract approach using numbers and key concepts with confidence.

PRESENTATION

All work should be dated, accompanied by a learning objective or learning question. All work should be well-presented according to the level the learner has reached. Pencils should be used in Mathematics books.

Further guidance can be found in the Marking policy.

RECORDING AND REPORTING

- Mid and short term plans are adjusted in response to formative assessment as outlined previously.
- Cohort tracking and action planning is an ongoing process.

Reporting in Mathematics takes place as outlined in the Assessment, Recording and Reporting policy.

- During the Spring term, parents receive an annual report indicating learners' achievement.
- During the Autumn and Summer terms, parents receive a 'Progress Report'.
- Parents are invited to an annual consultation evening during the Autumn and Spring terms.
- Additional consultation evenings may be arranged by class teachers where necessary.

THE ROLE OF THE MATHEMATICS SUBJECT LEADER

- Improvement of planning based on the monitoring and evaluation of the quality of teaching and learning, data analysis, self evaluation and audit.
- Take the lead in policy development; ensure progression and continuity throughout the school.
- Support colleagues in the planning, teaching and assessment of mathematics.
- Monitor planning, teaching and learner's progress in mathematics and advise the Head Teacher and staff on action needed.
- Take responsibility for the purchase and organisation of mathematics resources.
- Keep up to date with developments in mathematics education and disseminate information to colleagues as appropriate.
- Lead INSET and provide demonstration lessons as required.

THE ROLE OF THE CLASS TEACHER

- Take responsibility for the teaching of mathematics as set out in this policy and according to statutory requirements.
- Provide planning and reviews for the Headteacher and Mathematics leader to have access to.
- Provide samples of work and any tracking documentation to the Mathematics leader when required.
- Assess learner's work in order to detail further planning and meet learners' needs.

THE ROLE OF THE TEACHING ASSISTANT

The purpose of support staff is to assist in the delivery of the National Curriculum, in direct contact with learners. The role involves working with groups and individual learners under the direction of the class teacher.

At a time which is mutually agreed, support staff are expected to feedback to the class teacher. Often this will be during the lesson to ensure needs are addressed swiftly. The method of feedback should be agreed between the class teacher and teaching assistant with a focus on:

- highlighting individual's / group's strengths and areas to develop;
- providing information for next steps;
- informing future teaching decisions.

Support staff are expected to respond to work done in books by the individuals / groups they have worked with.

RESOURCES

Effective resource choice is essential to supporting conceptual understanding. Resources should support variation in representation to encourage learners to make deepen their understanding of a concept and to make links between ideas.

Classroom resources for mathematics include:

- resources for mental and oral work such as (but not limited to) place value counters, Base 10, number lines, digit cards and counting sticks;
- written and interactive resources for the year's teaching programme.
- materials requested by teaching staff.

Year group resources include:

- a variety of practical equipment for teaching number, shape and measures
- Maths No Problem scheme of work
- mathematical games and puzzles
- a growing collection of material on the school network, curated by the mathematics leader.

The Mathematics subject leader is responsible for ordering and maintaining resources and has an annual budget.

CALCULATORS

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.

HOMEWORK

Whilst we do not set a specific homework each week, we believe it is important that parents and carers are provided with opportunities to work with their children at home. Activities can, therefore, be found on the school website in the 'Maths Zone' and may also appear on year group pages. These activities may only be brief, but are valuable in promoting children's learning in mathematics. In addition, the school uses Mathletics to support further home learning opportunities. Weekly, a trophy is awarded to the highest performing class with individual achievements also celebrated.