

Curriculum Policy Document
Document Name: Maths Policy
First Written Date: March 2019
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Rationale

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. (DFE- Mathematics programmes of study: key stages 1 and 2 -National curriculum in England - September 2013).

At Bramhope Primary School, we use the mastery approach to mathematics. We believe in deep and sustainable learning which is achievable for all. Pupils are encouraged to reason about a concept and make connections as well as developing the ability to build on something that has already been sufficiently mastered.

To be competent in mathematics, pupils need to develop the three forms of knowledge:

- **Fluency** (Factual) *I know that.....*
- **Problem Solving** (Procedural) *I know how.....*
- **Reasoning** (Conceptual) *I know why.....*

Organisation of Content

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 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.

Resources

Planning:

- White Rose planning
- NRICH
- NCETM
- Maths No Problem
- Mathletics
- TimeTable Rockstars (Y2 from Summer 1)
- Bramhope Primary School Calculation Policy

Practical resources:

- 10 frames
- Numicon
- Base 10
- Plus 1
- Power of 2
- Part part whole models

Assessment of content

Formative assessment is part of intuitive teaching, which takes place in every maths lesson. This takes place through finding out what pupils already know, asking and answering questions and observing learners during activities. Mathematical toolkits are generated with pupils.

Research (Black et al 2003) shows that the most effective and beneficial forms of assessment are ones which support learning (i.e. are formative) and are built-in to lesson design. In primary mathematics they require:

- well-structured classroom activities (involving conceptual and procedural variation and intelligent practice);
- regular opportunities for discussion of answers and strategies to support pupils' reasoning skills and check and deepen their understanding;
- interaction and dialogue (between teacher and pupils, and between pupils themselves), focusing in particular on key ideas and concepts (including misconceptions and difficult points) and effective, efficient strategies of working mathematically.
- It is important for teachers to distinguish between a pupil's simple slip and an error that reflects a lack of understanding:

Marking

- For slips, it is often enough to simply indicate where each slip occurs, particularly as the school's approach is to encourage pupils to correct them;
- If errors demonstrate lack of understanding, the teacher may decide to take alternative courses of action. For instance, with a small number of pupils, the teacher may arrange same-day intervention while for a large number of pupils, the errors will be addressed in the next lesson.
- Evidence shows (Black and Wiliam 1998) that pupils benefit from marking their own work. Part of this responsibility is to identify for themselves the facts, strategies and concepts they know well and those which they find harder and need to continue to work on.
- Suitable summative assessment will enable a teacher to monitor pupils' progress. Where progress is secure, no further evidence is necessary. Where an individual pupil's progress is a concern, then more detailed monitoring and recording may be justified.
- It is not a routine expectation that next-steps or targets be written into pupils' books. The next lesson should be designed to take account of the next steps.

Summative assessment takes place through:

- End of Key Stage SATs in Y2 and Y6 (which are reported to parents at the end of the year)
- NFER tests in Autumn, Spring and Summer terms in Y3-5
- NFER tests in Autumn term in Y2
- NFER tests in Summer term in Y1
- Y4 Multiplication Check from 2020.

When pupils are identified as needing support, they receive intervention through:

- Weekly focus groups in KS2
- Daily basic skills practice in Y6
- Individual support plan when necessary

Accountability

Standards are monitored through:

- learning walks
- book scrutinies
- moderation
- formative and summative assessment
- staff meetings
- pupil progress meetings
- governor visits

Teaching strategies employed

Teachers use a range of teaching strategies to ensure progression through:

- Both teaching input and pupil activities,
- A balance between whole class, guided grouped and independent work, (groups, pairs and individual work)

At times there may be opportunities to develop skills and understanding of mathematics through additional activities, some of which may take place at home. The school has invested in the “Mathletics” and “Timetable Rockstars” websites which are accessible learning platforms that can be used to set learning for pupils.

Provision for all children

In maths, all pupils are encouraged to take risks, ask questions and explore alternative solutions without fear of being wrong. Pupils apply mathematical concepts to understand and solve problems. Through reasoning, they explain their thinking and present their findings in a variety of ways. They discuss mathematical ideas and concepts through flexible thinking.

When pupils are working significantly below their year group, a tailored programme of mathematical concept learning is put in place.

Reasoning forms part of every lesson to encourage all pupils to explain their mathematical thinking. Those operating at greater depth are given the opportunity to attend enrichment sessions at PHGS in Y6.

Inclusion

We have carefully considered and analysed the impact of this policy on equality and the possible implications for pupils with protected characteristics, as part of our commitment to meet the Public Sector Equality Duty (PSED) requirement to have due regard to the need to eliminate discrimination, advance equality of opportunity and foster good relations.

Mathematical teaching strategies support inclusion through the CPA (concrete, pictorial and abstract) approach.