



## **Broomhaugh C of E First School** **Maths Policy**

### **Intent**

Mathematics enables children to make sense of the world around them. Our aim is to provide a rich, stimulating and connected curriculum accessible to all pupils right through from Reception to Year 4 and beyond.

In doing so, we want to ensure our pupils:

- become fluent in the fundamentals of mathematics including through varied and frequent practice with increasingly complex problems over time, so that they develop conceptual understanding and the ability to recall and apply knowledge rapidly and accurately
- are able to 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.

We are committed to developing children's curiosity about the subject, as well as an appreciation of the beauty and power of Mathematics.

### **Implementation**

Our maths provision follows the National Curriculum and is based on the White Rose Maths (WRM) Schemes of Learning.

We follow the mastery principles of spending longer on topics to gain deeper understanding, making connections, keeping the class working together on the same topic and a fundamental belief that, through effort, all pupils are capable of understanding, doing and improving at mathematics. We also recognise that pupils need to revisit topics and we make sure that they have opportunities to do so, in different contexts and in different years, to strengthen and consolidate their understanding.

### **EYFS**

In Early Years, continuous provision is carefully planned to ensure a variety of mathematical activities are available for children to access freely. These activities encourage the learning of Maths in a child-led environment, where teachers model and use questioning to encourage children to explore mathematical concepts. Mathematical language is modelled to children in order to encourage discussion during play and through the use of books and rhymes. Children are also taught in groups each day, where the White Rose planning is used to support the Early Learning Goals, to ensure that children are given the opportunity to master the fundamental mathematical skills.

### **KS1 & 2**

The curriculum is designed to support pupils to be able to perform simpler tasks so that they can move on to more complex ones. This leads to a sequence of 'blocks' of mathematics. Within each of these blocks are 'small steps' which again are sequenced in order of difficulty and dependency. Each step leads carefully from the previous one, building on pupils' prior knowledge in order to develop new skills. Fluency, reasoning and problem solving are integrated into classroom practice.

We provide pupils with a variety of concrete and pictorial representations to reinforce their learning.

Teachers use careful questions to draw out children's discussions and their reasoning. Everyone has access to a range of equipment to embed and deepen their understanding. Some pupils may require additional support out of class to look back over the steps covered or to deliver short targeted sessions before a topic is taught. Lessons provide opportunities to achieve greater depth, with children being offered rich and sophisticated problems, as well as exploratory and investigative tasks.

Arithmetical fluency is reinforced daily across all year groups. These concepts are revisited through other topics across the year. In Years 3 & 4, times tables are practised regularly both at school and at home and are assessed weekly.

We encourage opportunities for exploring and investigating maths across the curriculum, outdoors and in the wider world.

## **Impact**

We believe that the impact of using our personalised Maths curriculum, together with the progressive steps and blocks, will result in:

- children responding enthusiastically and with enjoyment to maths in all contexts in the belief that 'we can all do maths'
- fast recall of facts and procedures
- flexibility and fluidity to move between different contexts and representations of maths
- ability to recognise relationships and make connections in maths lessons
- level of pride in the presentation of the work
- regular and ongoing assessment that informs teaching which, in turn, supports each child to make progress
- a lifelong connection with and love of maths

## **Purpose of study**

Mathematics is a creative and highly interconnected 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.

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.

## **Subject content**

### **EYFS**

Developing a strong grounding in number is essential so that all children develop the necessary building blocks to excel mathematically.

Children should be able to count confidently, develop a deep understanding of the numbers to 10, the relationships between them and the patterns within those numbers. By providing frequent and varied opportunities to build and apply this understanding - such as using manipulatives, including small pebbles and tens frames for organizing counting - children will develop a secure base of knowledge and vocabulary from which mastery of mathematics is built. In addition, it is important that the curriculum includes rich opportunities for children to develop their spatial reasoning skills across all areas of mathematics including shape, space and measures.

It is important that children develop positive attitudes and interests in mathematics, look for patterns and relationships, spot connections, 'have a go', talk to adults and peers about what they notice and not be afraid to make mistakes.

## **KS1 & 2**

Mathematics is a core subject within the National Curriculum. The fundamental skills, knowledge and concepts are set out in The National Curriculum for Mathematics programmes of study 2014.

The programmes of study for Mathematics are detailed year-by-year for KS1 and KS2.

[https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/335158/PRIMARY\\_national\\_curriculum\\_-\\_Mathematics\\_220714.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/335158/PRIMARY_national_curriculum_-_Mathematics_220714.pdf)

By the end of each key stage, pupils are expected to know, apply and understand the methods, skills and processes specified in the relevant programme of study.

Within the programmes of study, units taught include:

- Number - place value
- Number - addition and subtraction
- Number - multiplication and division
- Number - fractions (including decimals in Y4)
- Measurement
- Geometry - properties of shapes
- Geometry - position and direction
- Statistics (from Y2 onwards)

## **Teaching and Learning of Mathematics**

### **EYFS**

Mathematical activities are planned for daily group sessions and as part of child-initiated learning areas. Children are given the opportunity to talk and communicate about mathematics. They are encouraged to explore, enjoy, learn about, and use mathematics in a range of personalised situations.

### **National Curriculum**

KS1 and KS2 mathematics is taught in line with the National Curriculum for Mathematics programmes of study 2014.

Children in KS1 and KS2 are taught Mathematics for approximately 5 hours weekly in mixed ability year and/or class groups. Arithmetical fluency is reinforced both within lessons as well as outside of lessons (White Rose Maths - Flashback 4 is used to support this).

*Children's mathematical experiences will include:*

- whole class teaching to learn new concepts;
- working in groups co-operatively to develop teamwork and communication skills;
- paired work including mixed ability and ability pairs;
- independent work to develop perseverance;
- peer tutoring (within and across year groups);
- practical, investigative, oral, written and problem-solving activities;
- development of mental strategies;
- opportunity to develop a range of calculation methods;
- opportunity to internalise and develop strategies to increase their own pace of work;
- working to review and refine ideas;
- use of new technologies, such as Times Tables Rockstars, i-Pad apps etc.

*Children will be taught to:*

- use practical models and images to support learning. This will include; Base 10 (Dienes), Numicon, place value counters, place value grids, number lines, number squares, and bar models;
- refine own methods of calculation;
- record work systematically;
- value accuracy and present work which enhances the communication of ideas;
- use mathematically precise language;
- review and respond to the teacher's marking and verbal feedback in order to identify and address misconceptions and discover their next steps;
- use computers, i-pads and other technological devices;
- apply their knowledge and understanding of mathematics within other curriculum areas.

*Teachers will ensure that:*

- they promote a confident, positive attitude towards the learning and use of mathematics making it an enjoyable experience;
- mathematical resources are readily available and accessible to all children;
- children are encouraged to check their work in order to identify errors, reflect on their successes and set themselves targets for improvement;
- children are given time to practise and consolidate ideas;
- children are given timely and constructive feedback which enables them to identify what they should do next to improve;
- a secure foundation in mental calculation and recall of number facts is established before standard written methods are introduced;
- planning reflects the aims of the National Curriculum for Mathematics in developing fluency, reasoning and problem solving;
- planning is based upon the National Curriculum for Mathematics programmes of study using the White Rose Maths schemes of learning.

## **Inclusion**

Within the mastery curriculum, inclusion is achieved by emphasising deep knowledge and through individual support and intervention. Teachers use precise questioning in order to develop, extend and assess pupil's knowledge. Children are encouraged to communicate effectively through being able to explain and justify their thinking using precise mathematical language. Children have opportunities and are taught to work both collaboratively and independently. The intention is to provide all children with full access to the curriculum, enabling them to achieve confidence and competence – 'mastery' – in mathematics.

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.

The Maths curriculum is adapted and enabled to allow access for all pupils.

## **Assessment**

### **EYFS**

The Reception Baseline Assessment (RBA) is carried out in the Autumn Term (in the first six weeks of pupils starting school) and includes assessment of mathematics. The practical one-to-one assessment tasks consist of:

- early number
- early calculation (early addition/subtraction)
- mathematical language
- early understanding of pattern

Throughout the rest of Reception Year the children are assessed against the Early Learning Goals termly progress check points.

### **Key Stage 1 and Lower Key Stage 2**

Assessment is used to guide the progress of individual pupils and groups of pupils in mathematics. It involves:

### **Assessment for Learning**

- learning objectives are shared with the children in each lesson;
- pre-assessment and pre-teaching as appropriate
- close observation of the children at work and targeted questioning;
- peer and self-assessment used to allow children to consider their progress in relation to a lesson's learning objectives or overall block e.g. length and perimeter;
- marking that relates to how well a child has achieved against the learning objectives for the lesson;
- a marking system that is agreed across the school to ensure consistency of assessment;
- verbal (in the moment) and written feedback;
- reviewing, evaluating and modifying planning in light of children's achievements.

### **Assessment of Learning**

- formal summative assessment which is carried out at the end of each National Curriculum Key Stage (i.e. Year 2) through the use of SATs and teacher assessment;
- White Rose Maths block assessments where appropriate;
- White Rose Maths end of term assessments (arithmetic and problem solving and reasoning);
- teacher assessment in mathematics for each child is updated termly using curriculum assessment grids and GDS (greater depth standard) trackers where appropriate.
- internal and external moderation;
- annual summative assessment using evidence and data gathered;

### **Mathematics is promoted and celebrated through:**

- display within the classroom and around the school;
- positive reinforcement both verbally and written;
- modelling children's work as an example of standards;
- reports to parents;
- opportunities to integrate maths throughout and beyond the school day;
- celebration of key dates e.g. International Day of Mathematics.

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