

Britannia Primary School and Nursery



Maths Policy

‘Developing responsible citizens, confident individuals, and independent learners’

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<i>Committee</i>	LAB
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Mathematics at Britannia

Aims

At Britannia Primary School and Nursery, we aim to develop and nurture

Mathematics skills which will be beneficial in future years. We understand that Mathematics is a tool for everyday life, and it is used to analyse and communicate information and ideas to tackle a range of practical tasks and real life problems. We strive for all pupils to be confident mathematicians and develop a curiosity about Mathematics that will last for a lifetime. 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, National Curriculum for mathematics, 2014)

Teaching and learning of mathematics

At Britannia Primary School, you will typically see the following features to mathematics learning. We follow the mastery approach to mathematics supported by the White Rose Maths schemes of learning which value deep understanding of content taught in small steps rather than accelerating through content. Pupils who grasp a concept quicker will be given the chance to explore and understand at a deeper level, but all pupils achieve and master the content before moving on. This means that children will move through the age-related curriculum at broadly the same pace. Children are not set by "ability" as we do not feel that mathematical ability is a fixed state and that all children are able to achieve at a high level through carefully planned teaching, based on the requirements of the learners at the level demanded by the curriculum. Children across the school will use a range of manipulatives, such as base ten equipment, multilink, place value counters and rekenreks (amongst other equipment) to reveal and illustrate concepts and will be shown a wide variety of models and images to enable them to view and work with mathematical ideas flexibly. Lessons are planned in small step sequences which build upon the previous lesson to help embed learning and strengthen links with long term memory.

The lesson will follow a format of strong teacher modelling mixed with paired activities and individual tasks to check and deepen understanding. There is an emphasis on discussion and reasoning throughout.

Teachers use a range of questioning in class to promote reasoning and explanation from all pupils.

Key questions like: 'What's the same, what's different?'; 'What do you notice?' and 'Tell me how you worked that out?' will be evident in classes.

Teachers use the CPA approach (concrete, pictorial, abstract) approach to ensure that concepts are modelled to pupils using multiple representations. This ensures that procedural and conceptual understanding are developed simultaneously. The questions within lessons are represented in a

number of different ways (variation) which allows pupils to grasp the concept more easily. It also deepens their understanding of the concept being taught.

Pupils are seated in mixed ability groups as we believe that all pupils can attain highly in mathematics and every pupil will have different strengths and development areas. Therefore, groupings within classes are flexible and pupils will work in different groups dependent on their need.

Curriculum – EYFS

Mathematics within the EYFS is developed through purposeful, play based experiences and will be represented throughout the indoor and outdoor provision. The learning will be based on pupils' interests and schemas or current themes and will focus on the expectations from the EYFS framework, supported by White Rose Maths schemes of learning.

Curriculum – Year 1 to 6

The Curriculum is divided into the following sections:

- Number – including Number and Place Value, Addition and Subtraction, Multiplication and Division and Fractions (including decimals year 4, 5 & 6 and percentages years 5 & 6)
- Measurement
- Ratio and Proportion (Year 6 only)
- Algebra (Year 6 only)
- Geometry – including position and direction
- Statistics

Pupils spend far longer on key mathematical concepts in number. From Year 1 to Year 6, we follow a structured curriculum map from the White Rose Maths schemes of learning which incorporates the 'Ready to Progress' criteria alongside fulfilling the expectations of the national curriculum. All teachers are expected to refer to the online planning portal when planning lessons, adapting to meet the needs of their class.

Those pupils who grasp concepts more rapidly are given opportunities to deepen their knowledge further and improve their reasoning skills, through rich problems, rather than accelerating on to new curriculum content.

Planning

The White Rose Maths schemes of learning provides a list of small steps that need to be covered over the course of the year. They are listed in sequential order and should be followed in that order unless prior assessments indicate otherwise. They should build on each other to ensure that there is depth and breadth in learning. White Rose Maths incorporates the calculation methods used at Britannia. There is no set format for planning Mathematics at Britannia. There should be a mixture of fluency, reasoning and problem solving throughout which is provided with the mastery approach supported by the White Rose Maths schemes and resources.

Lesson Structure

Lessons are based on the mastery approach to maths to develop deep and lasting understanding of mathematical procedures and content. They will generally begin with retrieval practice based on previous learning, using the Flashback resource, although this may alternatively be used as part of morning work. Teachers will usually briefly recap previous learning and possibly work with any red star pupils before then building on this previous learning by introducing the next step to the pupils. Teachers use a range of concrete apparatus and visual representations at every opportunity to reinforce the concept and ensure deep and meaningful understanding. Pupils have the opportunity to practise the new skills using carefully crafted and varied questioning and talk will be used regularly to allow the pupils the opportunity to feedback as to how they solved problems.

During the teacher input, additional staff should be assessing, identifying, and supporting those pupils who do not grasp the concept as quickly or fully as others. This information will then be passed back to the teacher so that the teacher or other staff member can work directly with these pupils during independent work. The teacher input should be a mix of modelling, questioning and small tasks for the pupils to show understanding.

During independent learning the pupils should, as far as possible, practise the skills that they have acquired independently to avoid an over-reliance on adults, however throughout this time, additional staff should work with different pupils to support and assess learning as directed by the class teacher. The White Rose Maths printed workbooks will be used in most lessons to support the learning as part of the independent aspect of the lesson, however there will be additional challenges and support materials available for pupils to ensure all needs are met.

'Masters Glasses' are used as extensions across the school to ensure that pupils are challenged further once they have completed the independent learning. They focus on 4 aspects of mathematical reasoning: explaining, proving, convincing and using (applying).

Multiplication tables

Children are required to know all of their multiplication tables, up to 12 x 12 by the end of year four and will be tested as part of the national multiplication check. We follow the Times Table Fluency approach from spring term in Year 3. More information regarding this approach is within the fluence section.

We also use Times Tables Rockstars throughout KS2 to help the pupils gain a secure knowledge and fluency of times tables facts including related division facts.

Interventions

Using formative assessment gathered through the practise tasks, teacher questioning and other formative assessment methods, any pupils who have not grasped the concept or who have misconceptions will have a rapid intervention to ensure that they are ready for the next step of learning. Where possible, this will occur on the same day to ensure that gaps are rapidly plugged, ready for the next steps. If this is picked up through marking after school, then this intervention should occur the next day for those pupils (They should also have red star in their books to show that their teacher wants to speak to them)

Pupils working below the expected age level for their year group (in years 1-6) will be assessed and supported using the Numberstacks intervention – designed to help pupils understand the fundamentals of the number system as part of a small group.

Fluency

KS1

In order to build fluent young mathematicians, we have introduced the Number Facts Fluency programme from Number Sense Maths into all KS1 classes. The Number Facts Fluency programme builds confidence and flexibility with number, and fluency in addition and subtraction facts. All KS1 classes have a Number Facts Fluency session each day outside of their usual maths lesson.

LKS2

Our Year 3 and 4 classes follow the Number Sense Maths Times Table Fluency programme, which uses the mastery approach to secure knowledge of times table facts. The highly visual, research informed programme provides the structure and depth to times tables teaching that children need to achieve fluency in essential multiplication and division facts and concepts. A true Mastery programme, designed to achieve fluency for every child without exception. The programme develops recall of 36 core multiplication facts. Fluency in these facts provides the foundation for all written and mental multiplication and division. New facts are introduced and taught visually through the conceptual lessons, and aurally through the chanting of verbal sound patterns.

UKS2

Each class has 3 fluency sessions a week which are in addition to our normal maths lessons. 2 sessions a week are devoted to times table knowledge (KS2) with the third session used to cover any misconceptions that have arisen from recent classwork or assessments. This allows our teachers to identify and address any areas of learning that could be detrimental to subsequent maths learning in future. As we progress with the Number Sense Maths Times Table Fluency programme, it will roll up into UKS2 to ensure the automaticity of table knowledge continues with the same structures to support the pupils.

Assessment

Teachers will use formative assessment on a daily basis to inform their planning. Red stars are noted in the green folder and followed up promptly. Summative assessments will happen at set points during the year. Years 1, 3,4 and 5 will use NTS tests to assess how they are getting on during each term. These tests can then be used to measure current attainment and indicate progress, based on scores from the test. Years 2 and 6 will use past papers to assess the pupils towards the beginning of the year and at other key points during the year up to SATs.

At the end of every term, a score of 1-9 should be entered onto Pupil Asset to reflect their understanding of the curriculum at that point in time. This provides a progress measure for the class compared to previous years and end of key stage. This will be used for pupil progress meetings and performance management. It will also help to shape the end of year assessment for non-SATs year groups.

There is also a multiplication table assessment each half term which is used to identify pupils who are not on track to be confident with all tables by the end of Year 4 as well as those in UKS2 who have not achieved mastery of their multiplication tables. This allows us to identify and support pupils, where needed, with their table knowledge.