



# Maths Policy

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# Barley Lane Primary School

## Curriculum Policy

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We aim to **B**elieve in Ourselves, **L**earn together, **P**ersevere and **S**ucceed. In order to achieve this, and to achieve national standards for all of our children, we aim that our children:

- Communicate clearly and respectfully
- Have a good knowledge of the world and how history has impacted on this
- Develop cultural appreciation through rich and valuable experiences
- Show resilience, especially when faced with new situations

Our curriculum is underpinned by our five core values: Compassion, Honesty, Respect, Responsibility and Resilience. We aim to widen the life experiences for our children, with a particular focus on cultural and creative experiences. It is our intention that we provide regular opportunities for our children to visit different places of interest, experience the work of different international artists and to visit museums and places within their locality. These are designed to be memorable learning experiences which help to build character.

### Curriculum Intent

At Barley Lane Primary School, we know that mathematics is a core and essential part of the National Curriculum. Mathematics plays a fundamental role within our everyday lives whether it be working out how much an item costs; reading time and time tables correctly or a multitude of other reasons. This is delivered through a fun, engaging and knowledge-based curriculum, that puts number at its heart. In Barley Lane Primary School, we aim to build up the children's mathematical knowledge by embedding number skills across everything that they do. By putting the emphasis on number, the entirety of the maths curriculum will become more accessible

Through the study of mathematics, children are able to develop a wide range of essential skills, knowledge and understanding that they will be able to use as they progress through their school careers and into their adult lives. Maths is not merely about number and calculations, but also teaches children how to analyse a problem and consider how to approach it effectively, with the ultimate goal of improving the future prospects of our students. Mathematics is essential to everyday living in the respect that it is critical to science, technology and engineering; necessary for financial literacy and is required for most forms of employment.

Maths fits with our overall curriculum intent of children becoming resilient learners and critical thinkers, enabling them to have a wholesome understanding of the world around them. As part of this, we will strive to find opportunities to look at diverse mathematics whether it be through studying Roman Numerals; exploring Islamic geometric art or looking at the ideas of mathematicians across history. We will not only forge links with history but also with other subjects across the curriculum. Furthermore, we will strive to find opportunities to use our expansive grounds to teach elements of our mathematical topics.

The National Curriculum clearly identifies three clear branches of the mathematics curriculum: fluency, problem solving and reasoning. Children will be provided the opportunity to develop their knowledge, understanding and skillset in each area from the early years until they reach year 6. It is vital that they are provided with the correct resources - pictorial, concrete and abstract - to ensure that all children make progress within the three areas. These resources should not only be for children that struggle, but accessible for all.

## **Curriculum Implementation**

We follow the sequencing of the White Rose Maths Hub (WRMH) in order to achieve the aims outlined in the national curriculum though encourage a range of resources to deliver it including larger-scale investigations. It shares the Barley Lane desire to create independent, reflective thinkers, whose skills not only liberates them in maths but also support them across the curriculum.

The aims of teaching mathematics, as outlined in the national curriculum are to ensure that all pupils will:

- 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.
- 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.

The WRMH ensures that we get a broad balance of these three key areas and enables year groups to spiral back upon previous learning in order to consolidate and build upon it. Across all year groups and key stages, the WRMH enables children to gain a firm foundation in number and the four forms of calculation. By doing this, when the children are faced with problems about area, perimeter and shape they can apply their number knowledge to scaffold their reasoning and problem solving.

Our curriculum is designed to be inclusive, enabling children to master concepts and work on gaps in their knowledge. Working cohesively with the SENCo, we ensure children with additional needs can access the curriculum through the use of concrete resources and individualised targets (including the use of pre-key stage standards). We also ensure breadth and depth is developed through problem solving, critical thinking and investigations, so that all children are challenged.

### **Early Years and Key Stage 1**

The principle focus of mathematics in Early Years and Key Stage 1 is to ensure that all children in Barley Lane develop mental fluency with whole numbers, counting and place value whilst developing a deeper understanding through their reasoning and problem-solving activities. This understanding is evidenced in their maths books through the use of photographs, calculations and reasoning-based questions. Maths in Key Stage 1 is taught daily for at least one hour and each lesson builds on the skills that have been previously taught.

Within EYFS, students should count confidently, have a deep understanding of the numbers to 10 and begin to understand patterns and relationships between them. Teachers will provide opportunities to build and apply this understanding – such as using manipulatives including small pebbles and tens frames to support the organisation of number. In addition, they will achieve this through developing their reasoning skills across all areas of maths including shape, space and measures.

### **Key Stage 1**

In KS1, students will progress to involve working with numerals, written representations and the four operations. It is expected they will be provided with concrete objects - such as Numicon - to develop their competence in these areas. Additionally, at this area of their development, pupils should develop their ability to describe, draw, recognise and compare different shapes using the appropriate vocabulary to do so. Teaching should also feature a range of measure to describe and compare different quantities such as length, mass, volume, time and money.

By the end of Key Stage 1, pupils should be fluent in their number bonds to 20 and show precision in their work and understanding of place value. There should be an emphasis on fluency at this stage and this can be accomplished through continual practice and consolidation. This is particularly useful when looking at the 2, 5, 10 and 3 times tables which they are expected to know by the end of KS1. It is important that there are high expectations regarding their use of mathematical vocabulary and it should be consistent with their reading and spelling level.

### **Lower Key Stage 2 (Year 3 & 4)**

The principle focus of mathematics in Lower Key Stage 2 is to ensure that children build upon their knowledge in Key Stage 1 and become increasingly fluent with whole numbers and the four operations, including number facts and the concept of place value. This will feed into the children developing both their written and mental strategies and their confidence in applying this to increasingly complex numbers. Learning will develop at this stage to encompass more problem solving including those with simple fractions and decimal places. In geometry and statistics, children can draw with increasing accuracy whilst developing mathematical reasoning so they can analyse shapes and their relationships and confidently describe similarities between them.

As with KS1, this is evidenced in their maths books through the use of photographs, calculations and reasoning-based questions. Maths lessons are delivered daily for at least one hour and one registration task must also be centred around mathematical development.

By the end of year 4, pupils should be able to recall their multiplication tables up to and including the 12-multiplication table and show precision and fluency in relation to this. This will ensure that they are successful in the National Multiplication Check. In Lower Key Stage 2, there should continue to be an emphasis on using precise and accurate mathematical vocabulary.

### **Upper Key Stage 2 (Year 5 & 6)**

The principle focus of mathematics in Upper Key Stage 2 is to extend and build upon their understanding of the number system and place value. They will also improve their understanding of fractions, decimals, percentages and ratio and be able to apply their place value knowledge to do so. Pupils should be able to, therefore, solve a wider variety of problems which demand the efficient use of mental and written methods.

As with KS1 and LKS2, this is evidenced within their maths books through the form of photographs, calculations and reasoning-based problems. Maths is taught daily for at least one hour and one registration task must also be centred around mathematical development.

The firm foundation with number, that they have built across the school, will inform their ability to deal with the introduction of algebra and more complex geometrical problems. By the end of Key Stage 2, pupils should be fluent in the written methods for all four of the calculations and be confident in using complex vocabulary.

In Upper Key Stage 2, students are streamed based on their mathematical ability though we encourage flexibility with how they are grouped. This is to ensure that children are adequately challenged and gaps are acknowledged and rectified.

### **Additional information**

Throughout all Key Stages it is expected that teachers follow the school calculation policy to ensure that progression is made in incremental stages and to ensure children understand the process as opposed to simply using it. The policy is designed to ensure full coverage of the curriculum and exposes them to a variety of methods so they can select the one they find most appropriate. The policy also helps to differentiate maths activities so that children are challenged based on their understanding.

Furthermore, we encourage year groups to utilise the outdoor spaces to bring topics alive and allow them to apply maths in different ways. We also have a range of intervention tools that we use to aid their application such as Doodle, Timetable Rockstars and Purple Mash activities. Academic intervention is also achieved through the delivery of sessions by support teachers who also play an integral role in the support of SEN children.

### **Curriculum Impact**

Progression in mathematics will be assessed throughout each key stage through a mixture of summative and formative assessment:

#### **Summative assessment**

- End of Key Stage test in Year 2 and Year 6. In order to improve the children's confidence in these it is expected that pupils will be involved in mock tests and be exposed to test styled questions.
- To track their progress, Year 2 and Year 6 use the Teacher Assessment Framework (TAF) and from Year 1 to Year 6, targets are provided at the back of books so pupils can identify their own progress.
- Parents are informed of progress via reports and official confirmation of their end of Key Stage results.
- Times table test is at the end of Year 4. In order to improve the children's confidence with this it is expected that the children be provided with opportunities to practice their times tables whether it be for homework, in the lesson or on the computer.
- All year groups are expected to complete assessments at the end of the term to inform their assessment and checkpoint data (which is completed on Scholar pack)

### **Formative assessment**

- Regular observation of children at work during mathematics lessons, to be carried out by SLT, subject leaders and year group leaders.
- Listening to pupil voice about their mathematical learning
- Marking the work produced by the children and providing them with next steps in order to both consolidate and accelerate their learning.
- Training the children to effectively self and peer assess work
- Careful consideration of homework activities in order to build upon class-based learning. The majority of homework to be completed in books though this can be supplemented with quizzes and games on Purple Mash
- A range of questioning (both verbal and written)
- Progression and fidelity to the policy are monitored through book monitoring, data scrutiny and learning walks.

### **Other linked policies**

Curriculum Policy

Calculations Policy

Teaching and Learning Policy

Marking Policy

Assessment and Feedback Policy