



George Washington
Primary School

Mathematics Policy

March 2023

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Mathematics Policy

“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.”

National Curriculum 2014

Rationale

Mathematics is essential in everyday life and it is important that children develop their mathematical skills to the full. At George Washington Primary School, we aim to provide children with a mathematics curriculum and high-quality teaching which will produce children who are numerate, independent, inquisitive and confident. Our aim is to provide them with a stimulating environment and supportive resources so that children can achieve their true potential. We strive to provide opportunities for children to consolidate and reinforce mathematical skills and apply them in a range of contexts. We want to ensure that children develop a positive and enthusiastic attitude towards mathematics which will stay with them throughout their lives.

Children will:

- Foster a positive attitude to mathematics as an interesting and attractive part of the curriculum
- Develop the ability to think clearly and logically, with confidence, flexibility and independence of thought
- Develop a deeper understanding of mathematics through a process of enquiry and investigation
- Develop an understanding of the connectivity of patterns and relationships within mathematics
- Develop the ability to apply knowledge, skills and ideas in real life contexts outside the classroom, and become aware of the uses of mathematics in the wider world
- Develop the ability to use mathematics as a means of communicating ideas
- To develop an ability and inclination to work both alone and cooperatively to solve mathematical problems
- To develop personal qualities such as perseverance, independent thinking, cooperation and self-confidence through a sense of achievement and success
- To develop an appreciation of the creative aspects of mathematics

Statutory Requirements

EYFS

In reception, children follow the Early Years Foundation Stage (EYFS) framework (2021), in guidance with the Development Matters Framework.

The Statutory Framework outlines that:

“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. 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.”

Key Stage 1 and Key Stage 2

All children in KS1 and KS2 follow the National Curriculum for Mathematics (2014). The aims of the National Curriculum are to ensure that children become fluent in the fundamentals of mathematics and are able to reason mathematically and solve problems.

The National Curriculum expectations are set out for each year group under the following areas:

- Number and place value
- Addition & subtraction
- Multiplication & division
- Fractions
- Measurement
- Geometry – properties of shapes
- Geometry – position & direction
- Statistics
- Ratio and Proportion (Y6 only)
- Algebra (Y6 only)

Within each of these topics, children will develop their skills in each of the three focus areas:

Fluency

- Children should 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. (National Curriculum 2014)

- Written methods should be taught following George Washington’s calculation policy.
- The calculation policy also supports mental methods, and these are developed and embedded through starters, main tasks and plenaries.
- Multiplication tables are taught in each year group, and are differentiated to individual children’s needs wherever necessary.

Problem Solving

- Children should reason mathematically by following a line of enquiry, conjecturing relationships and generalisations, and developing an argument, justification or proof using mathematical language (National Curriculum 2014)

Reasoning

- Children should 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 (National Curriculum 2014)

Within all maths lessons, once a child has grasped a concept, they will have opportunities to extend their learning further by applying their knowledge and understanding to reasoning and problem-solving activities.

Approaches to Teaching and Learning

EYFS

In reception, children are taught maths daily in small group sessions. There are a range of resources and opportunities available for children to develop mathematical skills within the continuous provision (both inside and outside). Additional activities are planned and added to the provision to support the consolidation and application of aspects taught within a range of areas in the environment. Teachers and teaching assistants use observations and questioning to support children to make progress through play. Children are also encouraged to use mathematical knowledge and vocabulary within their daily routines.

Year 1

Children in year 1 follow a negotiated curriculum. They are taught maths in small groups, led by a teacher or teaching assistant. Each classroom has a maths area which includes a range of supportive resources which children can freely access to use in their play. Each week children are set challenges which link to previous learning and are differentiated to suit their ability.

Years 2-6

Children in years 2 to 6 are taught maths daily in a discrete maths lesson. Teachers also provide time within the day for children to recap previous learning and practise key skills to support children’s fluency. Opportunities for applying mathematical skills and knowledge in a range of cross-curriculum contexts are also planned for.

All teachers use a variety of learning and teaching styles in mathematics along with a range of strategies that cater for different types of learners. These include:

- CPA (Concrete, Pictorial and Abstract) methods
- Use of models and images
- Use of computer software including iPads
- Use of the outdoor environment
- Effective questioning
- Pupil demonstration and explanation

Fluency, reasoning and problem solving are at the heart of mathematics in George Washington Primary School. Each lesson should provide an opportunity for children to deepen their mathematical understanding. Teaching is based on a thorough understanding of children's needs, gathered through effective and rigorous assessment and tracking.

Long term and medium-term planning ensures that the objectives of the curriculum are covered during the year. Teachers use their professional discretion when deciding on how long is needed on each aspect of the maths curriculum, whilst ensuring all objectives are covered by the end of the academic year. Within short term planning, teachers should differentiate teaching to meet the needs of all children within the class.

Inclusion

All children have equal access to the mathematics curriculum. Our school strives to meet the needs of pupils with special educational needs, with disabilities, those who are very able, gifted and talented and those learning English as an additional language. Further guidance can be found in the school's SEND and Inclusion Policy.

Assessment and Target Setting

Assessment for learning should occur throughout the entire maths lesson, enabling teachers and teaching assistants to adapt their teaching/input to meet the children's needs. On a daily basis, children should be aware of the learning objectives and success criteria. Children should know when they are meeting their targets and be self-assessing against them.

Pupil's work should be marked in line with the Marking Policy. Green is used to highlight their success and pinks are given to address misconceptions, incorrect methods or move the learning on. In some cases verbal feedback will be given e.g. in EYFS or KS1 where teachers feel verbal feedback is more appropriate.

Teachers regularly update the targets in children's books, and this is then transferred onto an assessment tracker using evidence from pupil work and teacher judgement. This provides further understanding of the level that a child is working at and to inform a more rounded judgement of their abilities.

This tracking is used to identify children who are not making good progress. Pupil progress meetings ensure that pupils can be targeted for support. What that support will be and how intensive, depends upon the child's need and it may be a simple strategy within whole class teaching that is needed. Where further support is deemed necessary, children can access interventions.

Learning Outside the Classroom

Teachers should incorporate learning outside the classroom into the curriculum any time it could enhance the children's learning. In Foundation Stage children have free flow access to outdoor learning and activities are set up in the outdoor areas to allow children to develop to become independent and to take risks. These areas reflect what is within the classroom, including learning activities.

As children progress through the school outdoor activities should be planned to ensure progress.

Learning outside the classroom should be used regularly to support teaching and learning. This should include learning outside the classroom on our own school site, in our local area, and on visits and trips to provide rich experiences, promote pupils safety and raise expectations and attainment for all.

Monitoring

Teaching staff monitor their pupils through observation, discussion, teacher assessment, marking work and testing.

The teaching of mathematics is monitored through:

- Lesson observations – formal and informal drop-ins
- Scrutiny of work
- Scrutiny of planning
- In-school and locality moderation
- Tracking children's progress on class assessment sheets

Informing Parents

Copies of the Calculation Policy are available on our school website.