



Mathematics Policy

Mathematics is both a *key skill* within school, and a *life skill* to be utilised throughout every person's day to day experiences.

Philosophy

Mathematics equips pupils with the uniquely powerful set of tools to understand and change the world. These tools include logical reasoning, problem solving skills and the ability to think in abstract ways. Mathematics is important in everyday life. It is integral to all aspects of life and with this in mind, we endeavour to ensure that children develop a positive and enthusiastic attitude towards Mathematics that will stay with them.

The National Curriculum for Mathematics (2014) describes in detail what pupils must learn in each year group. Combined with our Calculation Policy, this ensures continuity, progression and high expectations for attainment in Mathematics.

It is vital that a positive attitude towards Mathematics is encouraged amongst all of our pupils in order to foster confidence and achievement in a skill that is essential in our society. At Ruislip Gardens Primary School we use the National Curriculum for Mathematics (2014) as the basis of our Mathematics programme. We are committed to ensuring that all pupils achieve mastery in the key concepts of Mathematics, appropriate for their age group, in order that they make progress and avoid gaps in their understanding that provide barriers to learning as they move through the school. Assessment for Learning, an emphasis on investigation, problem solving, the development of Mathematical thinking and development of teacher subject knowledge are therefore essential components of the Ruislip Gardens Primary School approach to this subject.

Aims:

- For pupils to be able to use correct and appropriate Mathematics language
- For pupils to use mental strategies first, before resorting to other methods
- To deliver the National Curriculum for Mathematics (2014) in ways that are imaginative, purposeful, well controlled and enjoyable
- To make links between Mathematics and other subjects
- To ensure that each child will leave our school numerate and able to use and apply Mathematics with confidence
- To foster a positive attitude to Mathematics as an interesting and attractive part of the curriculum.
- To develop the ability to think clearly and logically, with confidence, flexibility and independence of thought.
- To develop a deeper understanding of Mathematics through a process of enquiry and investigation.
- To develop an understanding of the connectivity of patterns and relationships within Mathematics.
- To 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.
- To 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 and an awareness of its aesthetic appeal.



Principles of Teaching and Learning

Through teaching with a problem solving approach, children will learn to understand, distill and clarify information; consider what they know that will help them to solve problems, realising what they need to know next; create systems and strategies, organising information in a way that helps find patterns and ultimately solutions and to communicate and present their findings effectively.

The school uses a variety of teaching and learning styles in Mathematics lessons during each lesson.

- In the EYFS, children are given the opportunity to develop their understanding of number, measurement, pattern and shape and space through a combination of short, formal teaching as well as a range of planned structured play situations, where there is plenty of scope for exploration.
- Children will become very competent 'counters' so that their fluency with the number system provides a foundation for mathematical understanding. Counting forwards and backwards in many different sized steps as well as from different starting and ending points is essential.
- Mathematics learning builds from a concrete understanding of concepts where children are manipulating objects. When children are able to see concepts this way, they then need to understand the same concepts represented pictorially. Children are then ready for abstract representation before being able to apply their knowledge to different situations.
- Children should be encouraged at all times to communicate their understanding of Mathematics so that it clarifies their thoughts.
- Children's mental Mathematics is of great importance, with number bonds, times tables facts and various strategies for calculation taught and practiced at school with support sought from parents through homework activities.
- A progression towards efficient written calculations should be developed and applied consistently in each year group. The school Calculation Policy should be followed.
- Individual targets should be used to monitor pupil progress.
- Though the nature of lessons will be very different depending on the needs of the class, children should be : active; practising skills they haven't yet mastered; learning something new OR learning to apply their knowledge to different contexts. They should be working at a good pace and being productive; sharing their thoughts and methods and being successful.

Our teachers strive to:

- build children's confidence and self esteem
- develop children's independence
- allow all children to experience regular success
- Contextualise Mathematics
- Use practical approaches to Mathematics (models and images)
- Encourage children to select independently resources to help them
- Challenge children of all abilities.
- Encourage children to enjoy Mathematics
- Develop a child's understanding of mathematical language
- Learn from teachers, peers and their own mistakes.
- Allow children to ask questions as well as answer them.



Our pupils should:

- have a well-developed sense of the size of a number and where it fits into the number system (place value)
- know by heart number facts such as number bonds, multiplication tables, doubles and halves
- use what they know by heart to figure out numbers mentally
- calculate accurately and efficiently, both mentally and in writing and paper
- drawing on a range of calculation strategies
- recognise when it is appropriate to use a calculator and be able to do so effectively
- make sense of number problems, including non-routine/'real' problems and identify the operations needed to solve them
- explain their methods and reasoning, using correct mathematical terms
- judge whether their answers are reasonable and have strategies for checking them where necessary
- suggest suitable units for measuring and make sensible estimates of measurements
- explain and make predictions from the numbers in graphs, diagrams, charts and tables
- develop spatial awareness and an understanding of the properties of 2D and 3D shapes

To provide adequate time for developing Mathematics, Mathematics is taught daily and discretely. However, application of skills are linked across the curriculum where appropriate.

Mathematics Curriculum Planning

Mathematics is a core subject in the National Curriculum and we use the objectives from this to support planning and to assess children's progress. Teachers are supported with planning and differentiation from the Abacus Mathematics Scheme.

- Planning begins from a thorough understanding of children's needs gleaned through effective and rigorous assessment and tracking, combined with high expectations and ambition for all children to achieve.
- Medium term planning will outline the areas of Mathematics that will be taught during the term to ensure coverage of the National Curriculum.
- Within short term planning, demonstrating the progression needed to reach and exceed the objective. This will enable the class teacher to follow a clear and systematic teaching sequence, where input and activities are differentiated by considering which parts of the success criteria individual children are ready for.
- Where children are working significantly above or below the objective the majority of the class need to work towards objectives from higher or lower age-groups will need to be planned and taught.
- Planning, where possible, should involve real life contexts for Mathematics, where children are problem solving with a purpose in mind.
- There should be a whole class investigation planned at least once per fortnight to practice different elements of problem solving, including: finding all possibilities, logic problems, finding rules and describing patterns, diagram/visual problems and exploring different aspects of number. During these investigations, there should be a honing in on specific problem solving skills that are transferable to other contexts.
- Class teachers should regularly plan for opportunities for children to apply their Mathematics skills to different problems within Mathematics lessons and across the curriculum. This will also allow children to revisit, practice and consolidate different areas of Mathematics and apply them within different contexts.
- Daily Task work will be set up by the teacher during the soft-start period. Children will be able to revisit, practice and consolidate previously learnt areas of Mathematics.

Assessment

Assessment is an integral and continuous part of the teaching and learning process at Ruislip Gardens Primary School and much of it is done informally as part of each teacher's day to day work. Teachers integrate the use of formative assessment strategies such as: effective questioning, clear learning objectives, the use of success criteria, effective feedback and response in their teaching and marking and observing children participating in activities. Findings from these types of assessment are used to inform future planning.

- Assessment for learning should occur throughout the entire Mathematics lesson, enabling teachers/teaching assistants to adapt their teaching/input to meet the children's needs. This feedback should be incisive and regular.
- On a daily basis children should self-asses against the learning objective giving them a sense of success. Children should know when they are meeting their targets and be self-assessing against those too.
- Pupil's work should be marked in line with the Marking Policy and should model how corrections should be made, giving children a chance to learn from their misconceptions or incorrect methods and respond to any next steps marking.
- Future lesson design should depend on class success evaluated through marking and observations made during the lesson.
- Summative assessments are made four times a year against year group KPIs to provide further understanding of the ability a child is working at and to inform a more rounded judgement of their abilities.
- Tracking is used in order that children who are not making good progress over time can be targeted for support in one form or another. What that support will be required and how intensive, depends upon the child's needs and it may be a simple strategy within whole class teaching that is needed. Where further support is deemed necessary, children can access interventions.
- Mathletics and other online resources will provide children with the motivation to practice – children should be encouraged to use jottings to support their Mathematics.

All children in Key Stage 1 and Key Stage 2 will be assessed half termly using the assessment procedures in school. Children will be assessed against the key performance indicators for their year group. Teachers will give children a score out of three for each of these performance indicators.

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- These numbers are used as follows:
 - 1 – The child has not achieved the key performance indicator.
 - 2 – The child is working at the level of the key performance indicator.
 - 3 – The child is working above the level of the key performance indicator.

Teachers will use the evidence gathered from class work, class observations and maths tests to make their judgement.

Early Years Foundation Stage (EYFS)

Children in Nursery and Reception classes follow the requirements of the EYFS curriculum that specifies the Early Learning Goals. Their Mathematical development is honed through structured and independent activities based around number and shape, space and measures. The learning environment includes an outdoor area for Mathematics. We are committed to ensuring the confident development of number sense and put emphasis on mastery of key early concepts. Pupils explore the 'story' of numbers to twenty and beyond and the development of models and images for numbers as a solid foundation for further progress.



Display and Resources

A bank of essential Mathematics resources are kept in each classroom. Further resources relating to key whole school topics are kept in the Tower.

- In the classrooms there should be, either on display or easily accessible to children, level appropriate resources, particularly concrete and pictorial apparatus to support children to grasp concepts.
- Mathematical vocabulary should be displayed so that children use this in the communication of their understanding.
- There should be Mathematics work on display in classrooms and in other areas of the school in order to encourage positive attitude and enthusiasm towards Mathematics for all groups of children.

Parents and Homework

We recognise that parents make a significant difference to children's progress in Mathematics and encourage this partnership. The homework policy and individual class homework leaflets outline how parents can support their child's learning. Mathematics homework is set once a week for all children in KS1 and KS2.

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