

Regents Park Community Primary School

Maths Subject Overview



DfE Statement:

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.

The national curriculum for mathematics aims to ensure that all pupils:

- 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
- 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.

Intent: What we want to achieve

The aims of our maths teaching at Regents Park School are set in line with the aims of the National Curriculum: fluency, reasoning and problem solving. We understand that pupils need to learn basic number facts and acquire fluency in procedures, alongside developing conceptual understanding if they are to be able to solve increasingly complex problems in life and the workplace.

The purpose of mathematics in our school is to ensure:

- all staff have high expectations of all our children
- quality first teaching which impacts on all children making progress
- a mastery approach to the teaching of maths which fits in with the needs of our school and children
- mathematical concepts are embedded and children’s mathematical understanding is deepened
- the use of multiple representations and a CPA approach to tackling mathematical problems
- a culture where all children are encouraged and have a ‘can do’ attitude
- a positive attitude towards mathematics and an awareness of the relevance of mathematics in the real world
- competence and confidence in mathematical knowledge, concepts and skills
- an ability to solve problems, to reason, to think logically and to work systematically and accurately.
- initiative and an ability to work both independently and in cooperation with others
- our children have the ability to communicate mathematics
- we create a vocabulary rich environment, where talk for maths is a key learning tool for all pupils
- all children have an understanding of mathematical vocabulary and use this with confidence
- our children apply mathematics across the curriculum and in real life
- an understanding of mathematics through a process of enquiry and experiment
- our children understand factual, procedural and conceptual processes
- our children are able to recall and apply knowledge quickly and accurately
- our children have ample opportunities to consolidate and reinforce mathematical learning

We want to foster a belief in our children that given the right teaching, a range of resources, thinking time and effort and determination will help them succeed at mathematics.

Implementation: How will we do this

We use a consistent approach in the planning and teaching of maths at Regents Park Community Primary School from EYFS to Year 6. As a school we follow the Bright Pi Scheme of work, which sets out the termly objectives we need to teach and provides teachers with strategies and ideas. The scheme ensures continuity and progression in the teaching of maths and is adapted according to the needs of our children. Teachers have the flexibility to decide how long they need to spend on each topic/unit and adapt their and planning to ensure personalised learning to address individual needs and requirements for their class.

Alongside this, teachers use White Rose Maths, NRICH, the NCETM, I see Reasoning and a range of other resources such as textbooks, games and online resources to plan activities. Ample opportunities are provided for children to develop their fluency, reasoning and problem-solving skills. Children are challenged through high order thinking questions, mastery challenges and tasks which deepen their understanding.

Through careful planning and preparation, we aim to ensure that throughout the school children are given opportunities for:

- learning new skills needed to succeed in mathematics
- Consolidating previously taught content through mental/oral starters such as 4 a day and Flashback 4
- practical activities and mathematical games
- problem solving, reasoning and practising fluency
- individual, group and whole class discussions and activities
- open and closed tasks
- a range of methods of calculating e.g. mental, pencil and paper and using a calculator in UKS2 once they are secure with the written methods
- working with technology such as laptops and iPads as a mathematical tool

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We teach whole class mathematics in Key Stages 1 and 2, with targeted support where needed

In Key Stage 1 and 2 teachers use a range of creative, stimulating and exciting activities and resources to aid children's mathematical learning. The children are encouraged to use the correct mathematical vocabulary and this is displayed in all classrooms. Teachers ensure every lesson has an element of fluency, reasoning and problem solving skills to enable children to develop their mathematical understanding, to learn new concepts and practise and consolidate what they already know.

Teachers use the CPA (concrete – pictorial – abstract) approach to teaching mathematics which helps children understand the structures of the four operations (addition, subtraction, multiplication and division). Concrete manipulatives are given to each class which include Numicon, base 10, Cuisenaire rods, place value counters, double sided counters to name a few. Multiple representations are encouraged through the use of part-whole models, bar modelling, tens frames etc.

Connections between different areas of mathematics are encouraged and children are asked to make links to deepen their understanding. Problems are presented in different ways and children are given both closed and open ended problems to solve. It is important that we ensure children articulate their reasoning when solving mathematical problems and are provided with different tasks to explain what they have found out, learnt or need to do. Real life links to problem solving is encouraged at Regents Park School so that children have a purpose to what they are learning and thus develop their understanding and skills in creative ways.

Mental calculation strategies are taught through the mental/oral starter and are embedded in the main teaching of the lesson. Children are encouraged to make jottings in their mathematics book.

Children in KS1 and KS2 take part in the 99 Club to aid number understanding and for them to become fluent with key mathematical facts. All classes have a display which shows the Club children have completed.

From Year 1 – Y4, children use the Fluency Bee Programme which is designed to develop confidence with numbers through varied and frequent practise. It helps to build number sense and develop a range of core skills in maths. We believe being fluent is more than just knowing 'how' to do something; it is about understanding 'why'. When a child is fluent, they can apply their understanding to a range of contexts and are able to select the most efficient method for the task at hand.

Teachers use assessment throughout their teaching to gauge what children have learnt and what they need further support with. End of topic/unit assessments are carried and these are used to inform planning and teaching. We make use of the NCETM Mastery materials, the DfE Maths Guidance and Testbase for end of topic/unit assessments. Children in KS2 also complete a Times Table test and make use of TTRockstars to improve their fluency and recall of facts.

In EYFS, developing a secure understanding of number is essential so that all children excel mathematically. In EYFS (Nursery and Reception) we follow the White Rose EYFS Curriculum to sequence learning in numbers to 10, the relationships between them and the patterns within those numbers. It is important that all children are able to count confidently and develop a secure base of knowledge and vocabulary by providing frequent and varied opportunities for children to build and apply this understanding, such as using manipulatives for organising, comparing and exploring numbers. In addition, it is important that children develop positive attitudes and interests in mathematics, look for patterns and relationships, 'have a go', talk about maths and not be afraid to make mistakes (Development Matters 2021). This is why we use the White Rose Maths planning and resources for our youngest learners. Teachers use this planning to provide learning during adult-led learning and continuous provision.

The Early Learning Goals for maths are: Number - children have a deep understanding of number to 10, including the composition of each number. They are able to subitise (recognise quantities without counting) up to 5 and can automatically recall (without reference to rhymes, counting or other aids) number bonds up to 5 (including subtraction facts) and some number bonds to 10, including double facts.

Numerical Patterns - children can verbally count beyond 20, recognising the pattern of the counting system; compare quantities up to 10 in different contexts, recognising when one quantity is greater than, less than or the same as the other quantity and explore and represent patterns within numbers up to 10, including evens and odds, double facts and how quantities can be distributed equally.

In Reception, children follow the White Rose EYFS Curriculum which supports them in developing secure early number foundations. Learning is sequenced across the year to build understanding of numbers to 10, the relationships between them and the patterns within those numbers. Children develop counting, subitising, comparison and composition of number through practical, hands-on experiences and mathematical talk. Alongside this, children explore early mathematical concepts through real-life contexts, continuous provision and adult-led learning. Teachers provide rich opportunities for using manipulatives and mathematical vocabulary to strengthen conceptual understanding. Ongoing assessment is used to identify next steps and to plan purposeful learning experiences.

We endeavour to make our mathematics curriculum accessible to all pupils; moving them through the programme of study at broadly the same pace in line with that expectations of the National Curriculum. We aim to make sure that all children have a deep understanding of the mathematics they are learning and can use this as a foundation for future mathematical learning. However, at the same time we do acknowledge that some children will need further intervention in order to develop their mathematical understanding. Where there are deemed to be gaps in children's understanding, the Bright Pi progression sheets show related skills from earlier year groups which are built into teachers' planning. It is expected that all children will 'master' the curriculum related to their age. Those pupils with a good level of understanding and who grasp concepts rapidly are challenged through being offered rich and sophisticated problems before any acceleration through new content. Throughout school we use targeted intervention to support those children who need additional practise.

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We value the importance of mathematics in other subjects and encourage children to use their mathematical skills and knowledge when tackling tasks in other subjects. We encourage links to be made to other subjects such as Design Technology, Computing, Science and PE.

We endeavour to continuously improve our practice through current research, working with our local maths hub and networking. We provide ample training opportunities for staff either through in-house INSET or via maths organisations such as the NCETM, the Maths Hub and White Rose Maths.

Impact: What the outcomes will be

At Regents Park Community Primary School, our children will achieve well and this will be reflected in end of Key Stage outcomes which will be in line with and/or exceed national expectations. They will have a love of maths and become confident mathematicians. They will be fluent in the fundamentals of mathematics and have an understanding of procedural and conceptual understanding. They will be able to recall and apply their maths knowledge rapidly and accurately. Times table knowledge will be evident and children will be secure in recalling facts. Our children will be skilled in problem-solving and will be able to apply their mathematical understanding to a variety of contexts including real-life scenarios. They will also be able to reason using mathematical vocabulary and show an understanding of concepts which deepen their knowledge. They will be able to apply their mathematical skills and knowledge in different situations and across the curriculum.

Our formative assessment is used to embed and use knowledge fluently, check understanding and inform teaching. Teachers use this assessment to ensure that all children are given the right level of support so they can progress; gaps in learning are identified and teachers can plan for this.

The teaching of maths is monitored across school on a termly basis. Learning walks, work scrutiny and pupil and staff voice are conducted to ensure consistency of teaching maths and to monitor the progress made.

Each term, children from Year 2 to 6 undertake a summative test to demonstrate their understanding of what they have learnt so far. This is done through our Star Maths tests; in addition to this, the children will also undertake an arithmetic and reasoning test each term. Children in Y1 will take an informal test at the end each term. Using both the formative and summative assessment will determine children's progress and attainment.