

# MATHS POLICY



**EXCEEDING EXPECTATIONS**

**This policy will be reviewed September 2019**

## **Introduction:**

This policy is set within the context of the school's vision, aims and policy on teaching and learning, it should be read in conjunction with the following school policies:

- Calculation Policy
- Teaching and Learning practices
- Curriculum Policy
- Assessment Policy
- Marking Policy
- Equalities Policy

## **School Vision:**

At Warwick Road Primary School our vision is to become an 'Outstanding School' with our mission to 'Exceed Expectations'. Encompassed within this is to provide all our children with the best opportunities to succeed in all areas of the curriculum and to develop in the social, cultural, moral and spiritual aspects of their lives too.

Our maths curriculum is specifically designed to equip our children with mathematical skills, the ability to reason and problem solve and fluency in all areas of the maths curriculum with in depth knowledge of application.

## **Rationale**

Mathematical understanding is critical to our children's future; it is essential children are mathematically literate. Mathematics enables pupils to solve everyday problems. It provides a powerful means of communication and is essential to the study of other subjects. Maths is a language in itself - universal in its nature and we believe it is thus vital that children at Warwick Road School are mathematically literate.

We understand arithmetic is a key component of maths and that it extends beyond the four operations, it involves an 'understanding of number. The structures and relationships underpin progression from counting in nursery rhyme to calculating with reasoning about numbers of all sizes, to working with measures and establishing the foundations for algebraic thinking.<sup>1</sup> We recognize that first hand experiences are essential precursors for learning traditional algorithms.

We inspire all children to 'exceed expectations' by ensuring:

- Children have practical hands on experience of using, comparing and calculating with numbers and quantities.
- There is an emphasis on place value across school.
- Children are fluent in mental method, including recall of number facts.
- Children have opportunities to solve problems enabling them to think critically and communicate their understanding.

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<sup>1</sup> Ofsted, 'Good practice in 20 primary mathematics: evidence in 20 successful schools' (November 2011)

- Children have opportunity to practice and hone skills and methods.
- Children are given the chance to apply learnt mathematical skills in different contexts across the curriculum.

The National Curriculum for Mathematics describes the learning requirements for each year group. The statutory document combined with the school's curriculum and calculation policy, ensures creativity, understanding and progression with high expectations for attainment and progress for all children. We aim to 'exceed expectations' and instil an aura of positivity encouraging pupils to foster confidence and achievement in mathematics.

We are committed to ensuring all pupils are literate and confident in mathematics, make genuine progress and that any barriers to learning are removed. At Warwick Road Primary School we place an emphasis on Assessment for Learning, problem solving, place value, development of mathematical thinking and fluency in mental methods. Our teachers receive quality CPD which ensures development of teacher subject knowledge. As a result of this, the children are fully prepared to apply their skills effectively in their future learning.

### **Aims**

At Warwick Road Primary School we aim to provide pupils with a rich and relevant mathematics curriculum and encompassed with this is high quality teaching that enables children to be both literate and confident in mathematics. We aim to help children by:

- developing confidence and competence with numbers and measures
- providing opportunities to apply mathematical learning to a range of real-life contexts and in a cross curricular manner
- encouraging them to communicate their mathematical ideas orally
- fostering a sense of inquiry and an enthusiasm for mathematics within a problem solving context.

To fulfil these requirements our pupils should:

- have a sense of the size of a number and understand numbers within place value
- have excellent recall of number facts including number bonds, times tables, doubles etc.
- develop excellent mental methods
- have the ability to use traditional written algorithms alongside other methods to calculate accurately and efficiently
- identify, understand and select appropriate calculation strategies
- make sense of number problems, including non-routine problems, and recognise 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 have an understanding of the properties of 2-D and 3D shapes
- use patterns and relationships in mathematics to solve puzzles and problems about numbers and shapes

### **Organisation**

The National Curriculum describes what should be taught within year groups. Warwick Road Primary School follows the statutory requirements.

### **Planning**

Alongside the National Curriculum the school uses the 'White Rose Maths Hub' scheme along with 'Abacus'. This scheme is annotated and adapted to meet the needs of learners. Long-term and Medium-Term plans are provided by the scheme but are tweaked to personalise learning.

Short-term planning identifies a clear success criteria for each learning objective. The success criteria is further differentiated as 'bronze, silver and gold.' The success criteria demonstrates the progression needed to reach and exceed the objective. The LO/SC will enable the class teacher to follow a clear and systematic teaching sequence, whereby questioning and activities are differentiated. Problem solving is embedded throughout the scheme.

Children's learning is pitched at age related expectations; however, where children are working significantly above or below the national requirements, teaching is adapted to meet the needs of learners.

Planning, where possible, should involve real life contexts for maths, where children are problem solving with a purpose in mind. At least once per half-term, children should have the opportunity to use mathematics in a 'real life context'. This may mean a deviation from the scheme of work and may involve links with what is currently in the media, for example, the general election, annual budget, purchase of resources for school, planning furniture for the new school library or even calculating prices and profit from events such as the Summer Fair or Enterprise Day. During these investigations, there should be a honing in on specific problem solving skills that are transferable to other contexts. At least once per half-term children should have the opportunity to embark upon a maths lesson outside of the classroom, either outdoors, in the hall or the ICT suite.

Class teachers should regularly plan opportunities for children to apply their maths skills to different problems within maths lessons and across the curriculum. Links that can be made with maths to 'Creative Curriculum' topics are encouraged and displayed in classes on the topic boards. Not only does this make maths cross-curricular, but it also allows children to revisit, practice and consolidate different areas of maths and apply them within different contexts.

### **Teaching**

Across KS1 and KS2, children are placed in sets for Mathematics where it is appropriate to do so. Mathematics is taught daily in lessons which have a structure and length appropriate to the age and stage of development of the children.

Each daily mathematics lesson includes:

- A mental and oral starter (about 5 – 10 minutes): Whole class work to rehearse, sharpen and develop mental and oral skills.
- The main teaching activity (30 to 40 minutes) Direct teaching input through demonstration, modelling and discussion. Teachers use a variety of visual, aural and kinaesthetic resources and use correct mathematical vocabulary during this part of the lesson. Children are actively involved through questioning and activities related to the learning objectives.
- A plenary (10 to 15 minutes): Whole class work to summarise key facts and ideas, sort out misconceptions and identify progress.

Across Early Years Foundation Stage, Mathematics is taught daily. Children are given the opportunity to develop their understanding in number and shape, space and measure through formal teaching and short group activities. The children then apply newly learnt skills in the enhanced provision which is adapted to current learning.

In Nursery, the children are taught in a class group where they are introduced to a new mathematical concept each week. The children are then given the chance to explore these skills during adult led activities within the provision.

In Reception, children are placed in sets for Mathematics where it is appropriate to do so.

Each daily mathematics session includes:

- A mental and oral starter (about 5 minutes).
- The main teaching activity (15 minutes). Direct teaching input through demonstration, modelling and discussion. Teachers use a variety of visual, aural and kinaesthetic resources.
- Small group activities related to the learning objectives. (20 minutes)

Children's mental maths 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. Each week children from Year 1 to Year 6 will also complete a mental maths/arithmetic test. The scores for these tests are collected each week on a tracker and are used to identify children who are not progressing. Teachers use this information to inform future planning and address misconceptions or place identified children in an intervention group.

The school calculation policy is followed throughout every lesson and is clearly displayed in all classrooms. This policy outlines the four calculations and how each calculation method progresses from reception to year 6. Teachers and children refer to this policy during lessons in order to understand how a specific calculation is solved and what the next step would be.

### Intervention

We understand the importance of supporting children who may be struggling and therefore upon identifying children who require additional support, place them in small intervention groups often taken by an ETA.

Intervention groups may include scheme based work or focused intervention on a key concept. The school uses Rapid Maths as a key intervention programme but is investigating other programmes more suitable to the new framework.

### Assessment/ Marking

Assessment for learning should seamlessly be woven through each maths lesson, enabling teachers/teaching assistants to adapt their teaching/input to meet the children's needs. This may be via thumb up/down, RAG, questioning etc. This can only be successful if all teachers have a thorough grasp and understanding of the subject they are teaching.

At Warwick Road School, we use characters like 'Improving Ian'; when children have found a concept difficult or misunderstood, Ian is used as an example and children are asked to identify his error and correct it. Additionally, we use 'Helpful Haleemah' as a character who provides children with support and guides them in steps towards solving either a problem or calculation.

'Purple Pen for a false start' is used as an AfL tool, when children complete a question incorrectly but are able to identify the error, they use the purple pen to show their understanding and correct their error.

On a daily basis children should self-assess against the learning objective and success criteria, enabling them to identify what they do well and what their next steps are.

At Warwick Road Primary, we also use learning checkpoints; these focus on one key objective or a small set of linked objectives and are designed to be used at the point at which the majority of children are expected to have mastered each objective. Each checkpoint is linked to a key National Curriculum objective and comes with teacher notes, which include suggestions for likely misconceptions and an activity that will help to address them. Learning checkpoints link themselves well with the Abacus scheme and is a tool used to assess children's in depth knowledge of maths. In practice, this means that children who have understood concepts or skills quickly should be challenged through activities and investigations that deepen their understanding of that idea, rather than moving on to new content. Children who do not learn a concept as quickly as the rest of the class should be supported to enable them to keep up.

Pupil's work should be marked in line with the Marking Policy and in some instances, more in depth or additional marking is required. Teachers should include a next step or a challenge, giving children the opportunity to respond. Future lesson design should depend on class success evaluated through marking and observations made during the lesson. Ongoing assessment will help to identify those children who require additional support, enabling teachers to place the children in intervention groups where appropriate.

Summative assessments are made each half term using Abacus Evolve which tests units covered in class. In addition to this, we also use PUMA termly assessments to measure maths progress and give attainment levels. Summative and formative assessments are combined together for the final termly maths grade.

## **Monitoring**

Monitoring of children's progress begins with performance review meetings but continues with the subject leader evaluating further evidence to ensure children are making progress. This monitoring happens through book scrutinisation, pupil interviews and analysis of assessment results and the assessments used.

Following monitoring activities, feedback is given to staff about how they can strengthen their practice and CPD (professional development) opportunities are built in where it would be deemed necessary. These might take the shape of inputs during staff meetings or by a variety of other means.

Where specific initiatives have been put in place through action planning for school development, these are monitored by the subject leader in order to evaluate their impact. Findings are reported to the Head Teacher.

## **Equal Opportunities**

We aim to ensure that all children make progress and gain positively from mathematics lessons. During short term planning teachers consider the needs of those children who:

- require access to a more simplified objective;
- require extension or challenge;
- need support to access the language aspects of the mathematics
- may have a physical, sensory, emotional or behavioural difficulty.

Whole class oral work and appropriate group or individual tasks are planned for through the use of a variety of strategies as appropriate, including support from a teaching assistant, targeted questions, careful modelling of mathematical language, provision of differentiated tasks and use of suitable resources.

## **Provision for Special Educational Needs**

Children who have a difficulty with mathematics are identified and catered for in line with the school's SEN Policy.

## **Homework**

We understand the importance of Home-School Partnership and thus set mathematics homework on a weekly/fortnightly basis where it is appropriate to do so.

To further strengthen this partnership, we hold maths workshops for parents to provide them with skills they need in order to work with their child at home. The workshops usually outline end of year expectations for a specific year group, a detailed insight in the methods we use to teach calculations in class and how we meet the needs of the maths curriculum. Teachers also display examples of test questions, including those with problem solving or reasoning at their core, and allow parents to have a deep knowledge of the required mathematical skills needed in order to solve them.

## **Display**

In classrooms there should be a maths working wall which details the main learning objective of the week along with the success criteria, key mathematical vocabulary that children must use, a WAGOLL (What A Good One Looks Like) of possibly how a specific calculation should be presented, the different steps needed in order to solve a calculation and a weekly/fortnightly problem solving maths challenge. Alongside this, classrooms have additional displays which use concrete and pictorial apparatus to support children to grasp concepts.

## **Resources**

Scheme: The books which work alongside the scheme are stored in the retrospective classrooms.

Each classroom has a bank of mathematics resources which are regularly updated. In addition there is a central store for mathematics resources.