



School Vision

In the teaching of maths at Robert Peel we wanted our policy and practice to reflect the school's vision for the children.

*"At Robert Peel Primary School our vision is to develop **confident, resilient and independent** learners who are able to **communicate effectively** with others. Our aim is for the children to be **happy** in all aspects of school life and for them to **aspire** to be the best they can be.*

We will achieve this by creating a culture of independent learning and discovery that is stimulating and enjoyable for both children and staff. The children's views will be sought and valued and high expectations will ensure that all children achieve even when challenged."

Subject Vision

We believe that by adopting a mastery approach to the teaching of maths at Robert Peel, more children will find maths accessible and engaging; ultimately providing them with a richer and deeper learning experience.

Teaching for Mastery

The content and principles underpinning the 2014 maths curriculum reflect those found in high performing education systems, particularly those in the south-east Asian countries such as Singapore and China. Although there are many differences between our education systems, we can learn from the 'mastery' approach to teaching that is commonly followed in these countries. Robert Peel has adopted the principles and features which characterise this methodology to address the three main aims of the National Curriculum – **Fluency – Reasoning – Problem Solving**.

Since mastery is what we want children to acquire, rather than for teachers to demonstrate we use the phrase 'teaching for mastery' to describe the range of elements of classroom practice and school organisation that combine to give children the best chance of mastering maths. Mastering maths means acquiring a deep, long-term, secure and adaptable understanding of the subject.

Our approach is based on key principles:

- **Problem solving** – Children are encouraged to identify and apply relevant principles and make connections between concepts.
- **High expectations** – We believe that no child should be left behind. The focus is on 'keeping up, rather than catching up'. By making high expectations, learners build on their confidence and resilience.
- **Concrete, pictorial, abstract** – Our approach incorporates all of these to help children explore and demonstrate mathematical ideas. Together, these elements help to cement knowledge so pupils truly understand what they have learnt.
- **Depth before breadth** – All learners benefit from deepening their conceptual understanding of maths, regardless of whether they have struggled or excelled. We believe children need to be given time to fully understand, explore and apply ideas – rather than accelerate through new topics.
- **Growth mind-set** – We believe that our 'abilities' are not fixed, but can be developed through practice, support and hard work. This belief encourages a love of learning and resilience that enables everyone to achieve.



- **Mathematical language** – the way that pupils speak and write about maths transforms their learning. We use full sentences in our lessons, encouraging children not just to give their answer but explain their reasoning behind it.

Maths lessons at Robert Peel

In our Early Years, the key principles of Mastery for Maths is adopted. Children will be introduced to key concepts, ideas and strategies to enable them to reach their Early Learning Goals by the end of Reception year. The maths will be very practical; with both direct teaching and independent activities available for children to access. As in KS1 and KS2, children will be encouraged to use the correct mathematical language and to speak using stem sentences. Teachers have access to Rising Stars planning for Early Years and will use this as a basis for the maths lessons and fluency sessions.

Throughout KS1 and 2, all children will participate in a 50 minute maths lesson each morning. Each lesson will be a 'small step' through the area of maths that they are learning about. Children will get the chance to explore their new learning, practice concepts and develop their understanding before moving on to independent work. In maths lessons at Robert Peel the following practices will be observed in every maths lesson:

- **Whole class teaching** – We teach maths to a whole class and children are encouraged to believe that by working hard they can succeed. At the planning stage, teachers consider what scaffolding may be required for some children who may struggle with the concepts being demonstrated and also suitable challenges for children who may grasp the concept quickly.
- **Longer and deeper** – Our plans allow for longer to be spent on topics and a slow pace moving through the curriculum. Teachers make use of Maths No Problem and White Rose Maths Hub resources when designing lessons. Each lesson focuses on one key conceptual idea and connections are made across the curriculum. This may appear that the pace of the lesson is slower, but progress and understanding are enhanced.
- **Use of CPA** – Children need to understand the mathematical concept they are practising. Using manipulatives initially helps children to develop this understanding; though the move to pictorial representations should be fairly rapid. The use of both of these approaches could also be for the child to be able to 'prove' their answer. Whenever a new concept is introduced, teachers should ensure they understand how to model and teach the steps using concrete and pictorial representations. There is guidance on progression through each of the four operations using CPA approach from White Rose (Appendix 1)
- **Talk partners** – Teachers will pair children with a partner of mixed ability; this is of benefit to both children. There will be ample time in the lesson for children to discuss their ideas and explore concepts together.
- **Modelling** – Teachers should make use of a teacher's maths book and visualiser to model not only the procedure the children will be using; but also the expectation for the presentation of their work.
- **Questioning** - Children's understanding will be probed by open questions, expecting answers in full sentences and using precise maths vocabulary.
- **Marking** – When children are completing their work staff will tick learning in line with the school's marking and feedback policy. Should staff feel that intervention is needed during the lesson, this will be annotated accordingly. All maths books are marked over lunch time, to enable same-day intervention groups to take place. This will help to keep the classes' learning together, so they can all move on at the same pace.



As fluency is one of the three main aims of the National Curriculum, each year group also has a time tabled fluency session each day. These sessions will be based around both factual and procedural fluency – key skills that children need to secure. Each child will have a fluency target card for their year group and a book for their fluency work to be completed in. When planning these sessions, teachers should consider the following:

- Revising known facts and strategies for them
- Pre-teaching of concepts that are due to be taught soon
- Revising procedures for mathematical operations
- Revisiting concrete and pictorial representations to secure understanding
- Problem solving sessions based on fluency.

The weekly maths plan will show the objective for that fluency session, teaching points and resources to be used.

Lesson design

The long term planning for maths at Robert Peel is based on the units from White Rose. This is followed by all year groups; with some flexibility for year 2 and year 6 to ensure coverage before SATS. Teachers need to consider the journey the children will make through each topic area and individual lessons as part of their planning procedure. Staff have been encouraged to use the 9-part maths grid to pre-plan (Appendix 2).

Each maths lesson is broken down into 4 parts:

1. **Explore - In Focus** – A problem is presented to explore - children try to solve it using manipulatives with their talk partners.
2. **Structure - Let's Learn** - Teacher models children's methods on board and helps to organise their ideas. The teacher will then model the new learning for that day, discussing connections and using mathematical language.
3. **Reflect - Guided Practice** - Reflection supported by teacher. Children practise skills, with talk partner – work through examples to move from concrete/pictorial to abstract.
4. **Practise –Independently** - Children complete independent work in their books.

Throughout the lesson, there should be opportunities planned in for children to go 'deeper' if they are grasping the new learning rapidly. These challenges should be easily identifiable in the children's books.

Learning Environment

Children will have access to concrete resources in lessons; it should be the 'norm' for all children to use them.

Each class room should have a maths display, which is regularly updated and changed. This 'working wall' should show representations that the children have been using for their reference. It should also include the mathematical language and sentences that the children have been using in their learning.



Assessment

- Formative assessment takes place in every classroom during every lesson. Through questioning and marking of books, staff are able to identify which children need extra support or challenge in that lesson. With books being marked during lessons, it provides time for immediate feedback to a child. Marking within the lesson also allows for a teacher to decide if there are any pupils that would benefit from a short same day intervention session in the afternoon.
- Each term children will carry out a PUMA paper. This covers the curriculum for the whole year's maths objectives and will provide a 'maths age'.
- To develop factual fluency within the school, children in years 2-6 will complete a TT Rockstars paper test each week. Year 1 will start to introduce an addition and subtraction weekly assessment from Spring term.
- To develop procedural fluency within the school, children in year 2-6 will complete an arithmetic test weekly. Year 1 will start to introduce an addition and subtraction weekly assessment from Spring term.
- At the end of each term, there are assessments available from White Rose that are linked to the objectives covered that term. Children's performance in these will give a good indication of which objectives are secure and which might need revisiting. Performance in these, will also be used as a basis for the planning of maths interventions that take place in the afternoon.

Children with SEND

The overriding belief at Robert Peel is that children all work together to master one objective at a time, there are some children who will find various aspects of maths a challenge. Whilst staff will try to support these children within the normal maths lessons along with their peers, it may be necessary to make adjustments for those children. This can be done in various ways:

- Clearly defined support on plans – adult to work with selected children.
- Task differentiated in some way for that child
- Resources prepared for that child to help support them
- Pre-teaching the day before

Where it is felt that children need more support than this, provision will be provided which will be detailed on a provision map and intervention groups will take place in the afternoons.

Resources

Every class will have resources that will support the day-to-day teaching of maths. Resources, in particular linking to place value and calculations, should be accessible to all children to support their learning. Resources linking to other areas of the maths curriculum are in a central cupboard in the hall.

Where possible, teachers should use concrete resources to introduce a new concept to children. Advice on how to do this is on Appendix 1, and there are also many other electronic resources on the school's server to support teachers in using concrete resources.