



# Mathematics Policy

*Sarah Nelson*

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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)

## Vision for Mathematics at Claygate

Mathematics is an integral aspect of everyday life. At Claygate we endeavour to ensure that all children develop a positive and enthusiastic attitude towards mathematics which will stay with them throughout their lives. Through the mathematics curriculum, we encourage and develop a mastery approach towards: skills in mental calculation, problem-solving strategies, develop and maintain speed of recall, use a range of mathematical vocabulary in context and develop resilience and independence to seek challenge.

At mastery level, a pupil truly understands a mathematical concept, idea or technique and can...

- describe it in their own words
- explain it to someone else
- represent it in a variety of ways (e.g. using concrete materials, pictures and symbols – the Concrete, Pictorial, Abstract approach)
- make up their own examples of it
- see connections between it and other facts or ideas
- recognise it in new situations and contexts
- make use of it in various ways, including in new situations

## Aims

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.

### **The purpose of mathematics in our school is to develop:**

- positive attitudes towards the subject and awareness of the relevance of mathematics in the real world
- competence and confidence in using and applying mathematical knowledge, concepts and skills
- an ability to solve problems, to reason, to think logically and to work systematically and accurately
- initiative and motivation to work both independently and in cooperation with others
- confident communication of maths where pupils ask and answer questions, openly share work and learn from mistakes
- an ability to use and apply mathematics across the curriculum and in real life
- an understanding of mathematics through a process of enquiry and investigation

We aim to provide a stimulating and exciting learning environment that takes account of different learning styles and uses appropriate resources to maximise teaching & learning opportunities.

Through our creative approach to teaching and learning we also seek to explore and utilise further opportunities to use and apply mathematics across all subject areas.

### **Teaching Principles**

- Teachers believe in the importance of mathematics and that the vast majority of children can succeed in learning mathematics in line with national expectations.
- The whole class is taught mathematics together, with no differentiation by acceleration to new content. We adopt a 'growth mind-set' approach with the belief that 'all children can'. The learning needs of individuals are addressed through careful scaffolding, questioning and appropriate rapid intervention where necessary, to provide appropriate support and challenge.
- The reasoning behind mathematical processes is emphasised. Teacher/pupil interaction explores how answers were obtained as well as why the method worked and what might be the most efficient strategy.
- Precise mathematical language, generally couched in full sentences, is used by all so that mathematical ideas are conveyed with clarity and precision.
- We value 'mathematical talk' and children get lots of opportunity to talk about and evaluate their mathematics during lessons.
- Conceptual variation and procedural variation are used extensively throughout teaching. This helps to present the mathematics in ways that promote deep, sustainable learning.
- Sufficient time is spent on key concepts to ensure learning is well developed and deeply embedded before moving on.

### **Teachers planning and organisation**

#### **Long Term Planning**

The National Curriculum for Mathematics 2014, Development Matters and the Early Learning Goals (Number and Numerical patterns) provide the long term planning for mathematics.

#### ***Medium Term Planning***

EYFS - Years 6 use the White Rose Maths Hub schemes of learning as their medium term planning documents. This provides exemplification for mathematics objectives which are then broken down into fluency, reasoning and problem solving; key aims of the National Curriculum. They support a mastery approach to teaching and learning and have number at their heart ie support the ideal of depth before breadth. They support pupils working together as a whole group and provide the time needed to build reasoning and problem solving elements into the curriculum.

### ***Short Term Planning***

White Rose Maths 'small steps' support daily lesson objectives and planning. Teachers of the EYFS ensure the children learn through a mixture of adult led activities and child initiated activities both inside and outside of the classroom. Mathematics is taught through an integrated approach. In Key Stage 1, daily lessons are 45-60 minutes, increasing to at least 60 minutes in Key Stage 2.

All lessons from Years 1 to Year 6 begin with 'Flashback 4' – a series of quick questions which draw on learning from previous units and year groups, supporting recall of key learning and ensuring gaps are closed.

Maths FIT is used to address misconceptions from the previous lesson and/or work with targeted children to extend and challenge their learning. The CREW acronym is used:

**C:** *Corrections*

**R:** *Review learning*

**E:** *Extend learning*

**W:** *Work with teacher*

### **Formative Assessment**

Our vision is for all children to be confident, independent learners, seeking their own challenge. In order to support this we encourage learners to self-assess and evaluate their work, make improvements and celebrate 'marvellous mistakes'.

The key elements:

- A learning culture, where children have self-belief and know how to learn and teachers have high expectations and belief that all pupils can succeed
- Children know learning objectives and expectations and co-construct success criteria
- Discussion about what excellence looks like
- Effective questioning
- Talk partners and classroom discussion
- Effective self, peer and teacher feedback
- Pupil outcomes inform the next steps for learning

Maths FIT – Feedback Intervention Time. Daily formative assessment and feedback, to drive next steps in learning, and meet needs of learners.

Claygate’s Marking and Feedback Policy values high quality feedback and time for all children to read, understand and respond to this feedback.

### **Summative assessment**

Mathematics assessment in the EYFS is of two main types – ongoing assessment which is what our practitioners do on a daily basis to make decisions about what the child has already learned or can do already so as to help the child move on in their learning - and more formal assessments using OPAL tracking. Ongoing assessment in Maths takes place through teacher observation of children’s learning and development as they take place in everyday activities and planned observations where teachers spend time on a specific task with an individual child or small group.

Years 1 – 6 use New PUMA maths termly assessment papers, which provide a standardised score as well as a maths age. In addition, children complete a White Rose Maths ‘end of block’ assessment at the end of each unit of learning. This enables teachers to quickly identify gaps and plan next steps. Children are assessed termly against Age Related Expectations (ARE) and data is tracked on ‘Pupil Asset’. Termly Pupil Progress Review meetings provide the time to consider every child’s progress, needs and next steps. Children not making sufficient progress or those who are working below ARE are identified and appropriate interventions are initiated.

Data from end of Key Stage National Curriculum tests enable school leaders to identify trends and set clear goals for improvement.

### **Inclusion**

In line with the School’s Inclusion Policy, each child has equal entitlement to all aspects of the Mathematics curriculum and to experience the full range of Mathematics activities. Therefore, in delivering Maths, care is taken to ensure that a variety of learning styles are accessed and teaching methods adopted.

Intervention groups take place both within the Maths lesson and outside; may be delivered by the teacher or teaching assistant and may involve individual or small group work, accessing both ends of the learning spectrum.

The school makes use of various online learning packages which are available to all children both at home and in the school. These include Doodle Maths, TTRockstars and bespoke 1:1 tuition for targeted pupils via Third Space Learning.



## ***Mathematics at Claygate Primary School***

### *Classroom Environment*

- Current vocabulary to be displayed
- STEM sentences to model and support explanations
- WR 'Small steps' of learning shared and displayed
- Self-assessment arrows from Y2 upwards to support feedback, marking and ensure misconceptions are addressed
- Concrete resources clearly labelled and readily available
- Maths working wall which is regularly updated and includes pupil input

### *Teaching and Learning*

- WR scheme used as the main base of planning supported by NRICH, NCETM, 3<sup>rd</sup> space learning and Power Maths
- WR end of unit assessments and NCETM materials to be used as a progress check at the end of each unit/term
- Rising Stars arithmetic practice tests used fortnightly in Key Stage 2 to check progress and identify gaps
- Mixed ability pairings which are regularly changed and analysed for effectiveness
- Flashback 4 in Years 1 – 6 at the start of every Maths lesson to support recall of key learning
- Maths FIT in Years 2 – 6 every lesson – this allows teachers to address misconceptions from previous session in a timely manner or work with targeted pupils to extend and challenge
- Seating arrangements should facilitate instant feedback and full participation by all
- Lessons should provide a balance of discussion, explanation, independent application, teacher modelling, keeping in mind NC aims of fluency, reasoning and problem solving
- Teachers should use differentiated questioning to check understanding and expect children to give answers in full sentences
- Children should be encouraged to prove their answers in a variety of ways e.g. pictorial representations, explanations, written explanations, calculations

### *Books*

- Flashback 4 clearly labelled and self-marked by pupils using purple pen
- Clear L.O focused on WR small step of learning, short date and margin where appropriate
- STEM sentences and prompts in front cover to support reasoning and explanations
- Clear evidence of written explanations, verbal explanations and pictorial representations (this could be in the form of photos)

- Evidence from Y2 up that children have returned to work using purple pen to address errors, misconceptions, answer questions and move learning forward
- Evidence that children and teachers are responding to learning