

Monkton Church of England Primary School

Mathematics Policy

Lead Person: Joanne Guilder

Policy Date: November 2022

Review Date: November 2025

Signatures:

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Chair of Governors Executive Headteacher



|  |
| --- |
| **Monkton Church of England Primary School** |
| **Compassion, Courage, Justice**  **Jesus said, ‘Go and do the same.’** |
| Our school has compassion at its heart, which inspires us to be people of courage, who care for ourselves, stand with others and seek justice as we grow and discover the world around us.  By knowing each individual, our learning environment is shaped to encourage creativity, promote challenge through our learning values and nurture spirituality, ensuring all thrive. |
| **The Parable of the Good Samaritan**  Luke 10:25-37 English Standard Version (ESV) |
| **Christian Foundations** |
| **Compassion Courage**  **Justice** |
| **As a Federation, we are passionate about every individual flourishing, so that they can be nurtured and develop as well-rounded children, living life in all its fullness.**  Every policy is written with our Christian Vision and Foundations in mind. |

Mathematics is a tool for everyday life, which equips us to make sense of the world around us, by developing the ability to reason logically, calculate and to think in abstract ways. It enables us to analyse and communicate information and ideas and to tackle a range of practical tasks and real-life problems. Mathematics is a creative discipline. It can simulate moments of pleasure and wonder when a pupil solves a problem for the first time, discovers a more elegant solution to that problem, or suddenly sees hidden connections, demonstrating how spirituality in our school can be developed across our curriculum.

Our school practice should provide opportunities which reflect the cultural diversity of our school, community and locality as every child in our school is special.

**Intent**

At Monkton Church of England Primary School, our intent for mathematics is to teach a rich, balanced and progressive curriculum using maths to reason, problem solve and develop fluent conceptual understanding in each area. That builds skills for life to better make sense of the world around them by making connections between mathematics and everyday life and resilience when faced with a challenge. The structure of the mathematics curriculum across school shows clear progression in line with age related expectations. As well as teaching the National Curriculum objectives for each year group, we embed maths within engaging cross-curricular projects. Teaching curriculum content in blocks allows children to explore skills and knowledge in depth and gain a secure understanding of particular subject matter. Key knowledge and skills are also revisited regularly through the two-year cycle allowing repetition to embed learning. A concrete, pictorial, abstract approach provides children with a clear structure in which they can develop their depth of understanding of mathematical concepts.

We want our children to enjoy learning maths, which comes through a flourishing belief in their own ability to achieve successfully within the challenges they undertake. In maths, we believe this is achieved when children are confidently fluent in their understanding of number and in their calculation skills. With this confidence, they can apply what they know to reason and explain their thinking and to solve problems, developing mastery and accessing higher levels of understanding. We aim to ensure that mathematics is a high-profile subject which children view positively and with a ‘Can do’ attitude.

**Implementation**

At Monkton teachers plan maths lessons following the National Curriculum using The White Rose Maths scheme. Maths is taught daily as a discrete lesson as well as a daily ‘Mash up’ to continual revise key elements of maths such as place value, time and money that may only been visited once a year normally.

Children learn using a range of resources, which support a concrete, pictorial and abstract approach guiding them through their understanding of mathematical processes. Children are familiar with these resources and can access them independently where needed. Our Calculation Policy is used consistently across the school and provides sequential building of knowledge and skills in using and applying the four operations.

Their progress in maths is carefully tracked through a range of assessment strategies to ensure teachers identify where children require support or challenge to assist their individual progress enabling them to flourish. Timely intervention (Catch up, stay up) is provided by the class teacher or support staff to address any misconceptions or gaps in understanding to enable children to confidently progress towards their next lesson. More confident mathematicians are challenged to show their mastery of maths concepts through investigations and problem solving tasks.

Children secure key number facts through mental maths challenges (including times tables awards/certificates, Times Tables Rock Stars, Numbots) progressing through levels so that number bonds and times tables facts are fluently recalled and applied. Achievement is celebrated at all stages through school wide presentations and displays as at Monkton we believe that ‘In God’s eyes, everyone is special’.

By engaging children in whole school challenges we maintain a high profile for the teaching and learning of maths. Through cross-curricular practical activities we make maths relevant to children’s lived experiences.

Feedback is given in a variety of ways to ensure pupils are well informed and making visible progress, including in the moment marking so children have instant feedback. Discussion is essential to learning and children are encouraged to discuss their thoughts, ideas and methods with a partner, group or the teacher. Children work both collaboratively and independently when solving problems which require them to persevere and develop resilience.

**Impact**

By the end of KS2 we aim for children to be fluent in the fundamentals of mathematics with a conceptual understanding and the ability to recall and apply knowledge rapidly and accurately. They should have the skills to solve problems by applying their mathematics to a variety of situations with increasing sophistication, including in unfamiliar contexts and to model real-life scenarios. Children will be able to reason mathematically by following a line of enquiry and develop and present a justification, argument or proof using mathematical language.

The impact of our mathematics curriculum is that children understand the relevance and importance of what they are learning in relation to real world concepts. Children know that maths is a vital life skill that they will rely on in many areas of their daily life. Children have a positive view of maths due to learning in an environment where maths is promoted as being an exciting and enjoyable subject in which they can investigate and ask questions; they know that it is OK to be ‘wrong’ and that this can strengthen their resilience because the journey to finding an answer is most important. Children are confident to ‘have a go’ and choose the equipment they need to help them to learn along with the strategies they think are best suited to each problem.

Our maths books evidence work of a high standard of which children clearly take pride; the range of activities demonstrate good coverage of fluency, reasoning and problem solving. Our feedback and interventions support children to strive to be the best mathematicians they can be. Our school standards are high, we moderate our books both internally and externally.

**Aims**

Our aims focus on equipping pupils with the mathematics they need to master the curriculum for each year group which requires that all pupils:

* to recall key number facts with **speed and accuracy** and use them to calculate and work out unknown facts;
* to develop their ability to **apply** mathematical skills with confidence and understanding when **solving problems.**
* to apply 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
* to express themselves and their ideas using the **language of mathematics** with assurance.
* to have sufficient depth of knowledge and understanding to reason and explain mathematical concepts and procedures and use them to solve a variety of problems.
* to develop positive attitudes to mathematics, recognising that mathematics can be both useful and enjoyable.
* to nurture a fascination and excitement of mathematics
* to be able to **use and apply** the skills in other curricular areas.

All of these must be age appropriate and within the PoS for their year group.

**The National Curriculum**

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.

Teaching Mathematics

**Organisation**

* A daily mathematics lesson of 60 minutes is taught in Year 1 – 6. We have also built in a Maths Mash-up session of approximately 10/15 mins which looks back at key elements of maths such as place value, time, data handling, the four-operations, patterns and these will be based on the class need and their curriculum level.
* Development Matters is being used for children at the EYFS. At this stage pupils experience mathematics on a daily basis, through ‘snacktime maths’, teacher directed tasks and child initiated play. This early introduction to mathematics will generally be undertaken orally and sometimes in the context of a class theme. Opportunities for mathematics should be developed through daily routines and all areas of learning.
* Pupils are taught within their classrooms and the outside areas, where specific maths areas will also be seen for children to freely access equipment.
* The skills acquired in the mathematics lesson are applied across the curriculum allowing the children to deepen their learning and to flourish.

A typical 60 minute lesson will include:

* A recap style starter (this could be the mash-up) or something else unrelated to the lesson or useful for the lesson.
* A main teaching activity

This will include both teaching input and pupil activities and a balance between whole class, guided group work, paired and individual work according to need. There will be a focus on reasoning and problem-solving, using a maths mastery approach.

Children may work in mixed or ability groups according to the intended learning outcome.

* Mini-plenaries throughout the session which may involve work with the whole class to refer back to Learning Objective and/or Success Criteria, address misconceptions, identify progress, to summarise key facts and ideas, clarify what needs to be remembered, to make links in other work and to discuss next steps in learning.

**Teaching strategies**

In order to provide the children with active and stimulating learning experiences, a variety of teaching and learning opportunities are adopted:-

* Children may work individually on a task, in pairs or in a small group, depending on the nature of the activity.
* Wherever possible, practical ‘real’ activities are used to introduce concepts and reinforce learning objectives.
* Opportunities to transfer skills learnt, to real situations, are used whenever possible.
* Activities are planned to encourage the full and active participation of all pupils.
* Teachers differentiate tasks throughout the lesson in order to meet the needs of all abilities. Self-differentiation is used regularly in order for children to challenge themselves.
* Teachers place a strong emphasis on correct use of mathematical language; this is supported by key vocabulary being displayed.
* All year groups will use manipulatives and children will be encouraged to access these independently when appropriate.
* Teachers value pupils’ oral contributions and create an ethos in which all children feel they can contribute.
* Throughout the school, children learn number facts and times tables using exciting videos and songs daily. Whole school displays are used to encourage children to learn and recall rapidly facts which will support their maths learning.
* Reasoning and problem solving skills are taught explicitly by teachers as part of maths lessons in order to model the use of correct mathematical vocabulary and written reasoning.
* Problem Solving and reasoning activities can be highlighted with the character ‘Super Sally’ this helps highlight where this occurs in lessons especially for moderation purposes. We then also have the character ‘Walter Wizard’ for the greater depth style questions.

**Teaching methods and approaches**

In order to provide the children with active and stimulating learning experiences, a variety of teaching and learning opportunities are adopted:

* Children may work individually on a task, in pairs or in a small group, depending on the nature of the activity.
* Where possible, children will be sat in mixed ability groupings and a self-differentiation approach will be used.

The mental and written methods taught are exemplified in the attached 'Calculation Policy'.

At times year groups will need to be taught separately and this will be carefully planned to ensure all children are participating in active learning.

**Differentiation Strategies:**

It is important to note that differentiation does not mean ‘different work’ but instead refers to the wide variety of resources, teaching styles, classroom activities and support materials that can be used by teachers to help make the curriculum accessible and allow pupils to progress within their lessons.

Monkton CEP School Policy is that children are not sat in ability groups and work follows the ‘Self-differentiation’ approach where children select the work they will complete and all children are challenged. Or they are encouraged to use manipulatives to allow them to access the same activity. Teachers may also be monitoring and moving children onto a different level of activity as required.

**Curriculum Planning**

**Medium Term Planning**

Teachers use the National Curriculum to plan teaching sequences that build learning over time. We use the White Rose scheme to support this. The emphasis is to develop a sequence of teaching and learning that encompasses the cycle of assess, plan, teach, practise, apply, and review through every unit. A strong emphasis on Using and Applying including reasoning in mathematics is embedded within the curriculum.

**Short term planning**

* A whole school weekly proforma is used to plan learning over a week.
* These plans must include learning objectives, outline activities for the mental and oral activites, whole class teaching focus, reasoning, problem solving, differentiation, and opportunities for Assessment for Learning through mini-plenaries and key vocabulary.
* Planning clearly shows which group the teacher will be focusing on each day and which group will be supported by the additional adults. The focus group is clearly identified.
* Teachers evaluate their plans daily, making notes on pupils who have exceeded or not achieved expectations. Annotations are made daily on the plans by both class teachers and teaching assistants.

*Planning is monitored by the Headteacher, maths subject leader and senior management team.*

**Assessment, recording and reporting**

Assessment takes place at three connected levels: short-term, medium-term and long-term. These assessments are used to inform teaching in a continuous cycle of planning, teaching and assessment.

**Day-to-day assessments**

As part of the ongoing teaching and learning process, teachers will assess children's understanding, achievement and progress in mathematics. Daily annotations which inform day to day teaching and learning are based on observation, questioning, informal testing and the marking and evaluation of work. This will also enable appropriate feedback to children. Developmental/Next step comments will be made in children’s books and opportunities to work on these will be provided. Learners will also be taught to assess and evaluate their own achievements by recognising successes, learning from their own mistakes and identifying areas for improvement. Class teachers will input a mathematics achievement against the learning objectives on Classroom monitor at least at the end of each block taught. The amount of progress made and percentages of those children on track to reach National Curriculum end of year targets will be analysed and discussed at Data Discussion meetings. Progress from Key Stage 1 will also be closely monitored in Key Stage 2 classes. This will also be discussed at 1:1 assessment, Pupil Progress and SLT Strategy meetings.

**Moderation and monitoring meetings**

The process of moderation/monitoring is an essential part of a robust assessment system. Teachers are involved in moderation of EYFS, and core subjects in KS1/2 in the following ways:

* With colleagues in school
* With colleagues in school during professional development meetings
* With colleagues from the collaboration
* Via attendance at statutory LA meetings
* Via LA representatives coming into school for moderation

**Summative assessments**

Summative assessments are carried out in Year 1-6 through the use of White Rose maths end of block assessments and their termly assessments in arithmetic and reasoning. This enables attainment to be tracked and will inform provision maps and planning. Gap analysis will be carried out and used to inform planning.

**Intervention programmes**

The school operates a flexible approach to intervention programmes based on weaknesses identified in termly pupil progress meetings and through ongoing data analysis by the senior leadership and maths teams. Teachers use guided groups led by themselves and teaching assistants to tackle children’s misconceptions in maths. When needed, teaching assistants lead short daily intervention programmes outside of the maths lessons. A flexible daily session also takes place informed by needs arising from the morning’s teaching with the aim of ensuring that children are making the maximum level of progress and gaps are closed.

**Equal Opportunities**

All pupils will have equal opportunity to reach their full potential across the mathematics curriculum regardless of their race, gender, cultural background, ability or physical disability we want every child to succeed.

**Inclusion**

The school’s equal opportunities policy applies to the teaching of mathematics as to all other subjects.

**Environment**

It is important that the classroom environment supports both the learning and teaching of mathematics.

The school aims to provide a mathematically stimulating environment:

* through the use of working walls to support learning and teaching in a lesson or series of lessons.
* through interactive displays that promote mathematical thinking and discussion
* through displays of pupils’ work that celebrate achievement, including WAGOLLs (‘What a good one looks like’)
* by providing a good range of resources and manipulatives for teacher and pupil use.

In every classroom, resources such as number lines, hundred squares, place value counters, double-sided counters, place value charts and multiplication squares are displayed as appropriate and used for whole class or individual work. Children are encouraged to access these independently.

**Homework**

We recognise the importance of making links between home and school and encourage parental involvement with the learning of mathematics.

Homework provides opportunities for children

* to practise and consolidate their skills and knowledge of mental arithmetic methods,
* to share their mathematical work with their family
* to prepare for their future learning.

Children in Years 1-6 are encouraged to access Numbots (lower school) and TTRockstars (upper school) on a regular basis. This will be monitored by class teachers as children move through the levels.

See **Homework** policy for further details.

This policy will be reviewed November 2025.