



Maths Policy

Lead Responsibility	Kirsty Caldwell	Approved By Governors	
Implementation date	September 2023	Review date	September 2024

MISSION STATEMENT

Our school is a safe, happy and inclusive place where everybody is valued, treated equally, respected and where difference is celebrated.

We believe that all members of our School community should reach their full potential academically, socially and emotionally.

We are committed to ensuring that every child is prepared for their future lives as responsible citizens with a strong moral purpose.

Learning is a lifelong journey and we strive for all children to enjoy learning; leading to independent, motivated 'Lifelong Learners' who are prepared to face the modern day wider world with enthusiasm.

Vision

At Whiston Willis Primary Academy, we believe mathematics should provide the children with opportunities to have an understanding of the fundamental, basic skills that will equip them for future life both mathematically and through any problems that they may face. Through reasoning and problem solving, mathematics helps develop the mind's meta-cognitive skills. Underpinning our teaching and learning of mathematics, we encourage children to take ownership of their individual learning and to identify areas for development.

We believe mathematics should be a subject that fills the children with inquisition to solve problems without a fear of failure, thus the focus of our teaching and learning pedagogy being on teaching a range methods and strategies to allow children to decide which is best for them, in order to reach their end goal.

Mathematics must be built on each year and so, throughout school, children will be following the Concrete, Pictorial, Abstract way of learning, allowing them to be exposed to concepts in a hands on, practical approach initially. They will then progress onto pictorial representations before completing abstract calculations. This approach enables children to build a solid understanding of mathematical concepts and not just the secretarial process of completing a calculation – this is pivotal to allowing fluidity of new learning and to make mathematical links across learning.

Rationale

To ensure our vision is met, we deliver our Mathematics teaching using a mastery approach. To teach for mastery means to incorporate the 5 main principles of mastery: representation and structure, fluency, variation, mathematical thinking and coherence. In line with this, our Early Years Foundation Stage follow a mastery approach to the teaching of mathematics, ensuring that all principles are included and do so in a way that can be built upon in Key Stage 1.

With this approach we believe we can help build children who believe they are good at maths and begin each lesson with an 'I can' attitude. Within our lessons, we build strong, resilient, hardworking problem solvers who show determination to complete any task given to them.

We ensure we provide children with a number of strategies that they can use to solve any problem they are faced with, allowing more children to progress in their learning at broadly the same pace. We believe all children, with the correct support, can access all areas of the Mathematics curriculum provided.

We are strong believers in ensuring children understand the concept of number and are not merely understanding rote counting. We develop a deeper, critical approach to learning new concepts and use the concrete, pictorial and abstract pedagogy to ensure all learners make progress suitable to their individual needs. Our mastery approach throughout school enables us to do this successfully.

Aims

The National Curriculum for Mathematics (2014) 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 content and principles underpinning the mathematics curriculum reflect those found in high performing education systems internationally, particularly those of east and south-east Asian countries such as Singapore, Japan, South Korea and China. The principles and features that characterise this 'mastery' approach are:

- teachers reinforce an expectation that all pupils are capable of achieving high standards in mathematics.
- the large majority of pupils progress through the curriculum content at the same pace. Differentiation is achieved by emphasising deep knowledge and through individual support and intervention.
- teaching is underpinned by methodical curriculum design and supported by carefully crafted lessons and resources to foster deep conceptual and procedural knowledge.
- practice and consolidation play a central role. Carefully designed variation within this builds fluency and understanding of underlying mathematical concepts in tandem.
- teachers use precise questioning in class to test conceptual and procedural knowledge, and assess pupils regularly to identify those requiring intervention so that all pupils can progress at broadly the same pace.

Mathematics Curriculum

The Foundation Stage

As noted in the EY2P Educational Programmes, it is noted that Mathematics should:

'Develop a strong grounding in number is essential so that all children develop the necessary building blocks to excel mathematically. Children should be able to count confidently, develop a deep understanding of the numbers to 10, the relationships between them and the patterns within those numbers. By providing frequent and varied opportunities to build and apply this understanding - such as using manipulatives, including small pebbles and tens frames for organising counting - children will develop a secure base of knowledge and vocabulary from which mastery of mathematics is built. In addition, it is important that the curriculum includes rich opportunities for children to develop their spatial reasoning skills across all areas of mathematics including shape, space and measures. It is important that children develop positive attitudes and interests in mathematics, look for patterns and relationships, spot connections, 'have a go', talk to adults and peers about what they notice and not be afraid to make mistakes.

Our EYFS use the NCETM Mastering Number programme.

Nursery

In Nursery, each half-term is dedicated to one of the key strands of mastery teaching. Within this focus, children will focus on understanding numbers to five, but fully develop a depth of knowledge of numbers to 3, knowing how to subitise 3 in a variation of ways.

In Reception, children build upon the learning in Nursery by subitising numbers up to 10. In contrast to Nursery Reception have a number focus each week and so the strands of learning and mastery approach are thread throughout these numbers. This enables us to focus throgoughly on numbers to 10 in-depth, whilst rote counting on to 20.

Years 1 to 6

Through Years 1 to 6 we use a coherent programme of high-quality materials and exercises, which are structured with great care to build deep conceptual knowledge alongside developing procedural fluency – this is done through the 'Maths – No Problem!' series.

The 'Maths - No Problem!' textbooks and workbooks are arranged in chapters and, over the course of the academic year, all units of the National Curriculum 2014 are covered.

The short term planning is done weekly, with teachers planning learning objectives, 'Steps to Success', identifying possible misconceptions, key vocabulary and ways to challenge pupils through higher order questioning and extensions.

All children will be learning Maths through a Mathematical continuum which aligns with the National Curriculum. For some children with SEND, children may be working on the continuum at a different level to their peers. All Teaching & Learning is tailored to the child's individual needs.

A Typical Lesson – Maths No Problem!

Lessons last approximately one hour and are taught daily. Each lesson consists of 5 parts; Explore, Let's Learn, Guided Practice, Worksheet and Extension.

Explore – This is a problem-solving activity, which prompts discussion and reasoning. All children work collaboratively to solve the problem using a method of their choice. In Key Stage One, these problems are almost always presented with objects (concrete manipulatives) for children to use. Sometimes, Key Stage 1 children may be prompted to represent their findings in a pictorial or abstract way within their journals. In Key Stage 2, children are asked to represent their findings in as many different methods as possible (concrete, pictorial or abstract) – these will be noted in their Maths Journals when necessary and demonstrate their deeper understanding.

Master – During Master, the class teacher will lead pupils through strategies for solving the problem, including those already discussed. Teachers will model all methods to solving the problem and write these onto Working Walls which remains for the duration of the lesson and will be recapped in the following lesson. If children have used a method not planned by the teacher, this will be discussed, but methods taught through MNP will be modelled and encouraged in line with our calculation policy and to ensure consistency.

Guided Practice – After the teacher is confident they have addressed enough methods, the class will complete some questions in 'Guided Practice' in their Maths Journal. Carefully designed variation in these questions builds fluency and deep understanding. We use the 'I do', 'We do' and 'You do' approach in which staff will model some GP questions and children will teach each other. All children are sat in mixed ability pairings, which provides opportunities for children to verbally explain processes before completing them in their journals. This provides opportunities for assessment from the teacher and the children to again, engage in conversation with peers, eradicating any misconceptions. Children will self-mark this work.

Workbook – Children will complete their workbook independently unless part of a guided group. Guided group children will be anybody who teachers have assessed as not being secure of the lesson objective, during Guided Practice. Within the guided group, children will highlight in pink the first question they have support with. Once the child has demonstrated an understanding, they continue the rest of the activity independently, highlighting green where they begin independently.

Extension – If children finish the workbook mostly correctly (see information regarding honesty sheets below), they will complete an extension activity – this is a reasoning or problem solving question centred on the learning objective.

Honesty Sheets

It is proven, through research, that by children self-assessing, the progress they make is accelerated. Children are able to identify errors independently and retrace their steps when solving the calculation, thus finding at which stage they made an error. All children across Key Stage 2 have access to answer sheets, known as honesty sheets, for each worksheet they complete. If a child has made a mistake, they must note on their worksheet how they made the mistake – this is identified through children beginning the calculation again. Where there is no calculation e.g. place value questions, children will write where they have identified their own error.

Calculation policy

As a school we believe that all children, when introduced to a key new concept, should have the opportunity to build competency in this topic by using the CPA approach (Concrete, Pictorial, and Abstract). All information regarding this can be found in the Calculation Policy.

Resources

The use of mathematics resources is integral to the CPA approach and thus planned into our teaching and learning. Resources such as number lines, Cuisenaire Rods, multi-link cubes, dienes, hundred squares, shapes, etc. are located within a central storage for ease of access for all staff. Staff will prepare these resources prior

to all lessons and encourage children to decide independently whether these resources will support them in achieving the lesson objective. Our ultimate aim is that all children will be confident and secure enough in the abstract representation that concrete manipulatives are no longer required.

Times Tables

To find more information regarding our approach to Times Tables, please refer to our Times Tables policy.

Early Bird Maths

Key Stage 1 and 2

Upon arrival to school each day at 8:40am, each class will have calculations ready to complete. These are always a recap of previous learning, whether that is learning taught within the academic year, or taught in previous years. At 9am, staff will go through the answers for all children to be exposed regardless of time of arrival. This ensures that children are recapping and over learning fundamental mathematics skills daily, linking to our whole school approach to long term memory.

Classroom Display

EYFS

Classrooms in EYFS have displays and continuous provision areas rich in mathematical vocabulary and number recognition.

Key Stage 1

Teachers will model all strategies to children using flip chart paper. This will then be added to the Working Wall for children to be exposed to constantly. Staff will discuss vocabulary and display key words, to support with the reading within sessions, onto the Working Wall.

Key Stage 2

Maths Working Walls are displayed as whiteboards, with clear squares to demonstrate the similarities of children's journals. Staff will model all methods straight onto the Working Wall and this will remain throughout the lesson and the beginning of the subsequent lesson.

Intervention

At the end of each lesson, children will self-assess against a traffic light tracker of 1,2,3. Teachers will then assess workbooks and make a judgement on any child who has not shown a secure understanding of the objective. For these children, a same-day intervention will take place that afternoon. This will be delivered by either the class teacher or a member of support staff. If children still struggle to understand this objective, it will be addressed in the following lesson during Explore – the teacher will deliver this before the child then works with peers to solve the Explore task.

EQUALITY IMPACT STATEMENT:

Under the Equality Act 2010, we have a duty not to discriminate against any person based on 'protected characteristics'.

This policy has been equality impact assessed and we believe that it is in line with the Equality Act 2010 as it is fair, it does not prioritise or disadvantage any pupil and it helps to promote equality at Whiston Willis.

MONITORING:

The practical application of this policy will be reviewed by subject leaders in consultation with the curriculum lead within school regularly. The effectiveness of the policy is demonstrated through subject leadership reports to governors which include impact statements on outcomes for pupils and the quality of teaching and learning.

The policy document will be reviewed by the subject leader and curriculum leader annually or earlier if required.