



Waterhouses CE Primary Academy and Nursery

“Let your light shine”

Make your light shine, so others will see the good you do and will praise your Father in heaven. Matt 5 v 16

Mathematics Curriculum Statement

Mathematics Intent

Mathematics at Waterhouses CE Primary Academy and Nursery is a creative and highly-interconnected subject. All Mathematics teaching is linked to the values of our trust (QEGSMAT), school and to the three statutory aims of the National Curriculum: fluency, reasoning and problem solving.

Our intent is for all children to become fluent mathematicians, who are able to confidently recall and apply mathematical knowledge; make rich connections across a range of mathematical concepts; and demonstrate conceptual understanding. We aim for all of our children to be proficient users of mathematical language, which will support them in their mathematical reasoning in different contexts and also in understanding what is asked of them. Our ambition is for children to become competent problem solvers, through applying their mathematical knowledge to wide range of problems, in maths lessons, other subjects and in ‘real life’.

We want to ensure that our children are prepared for the modern world and develop values that help them to be responsible, supportive and collaborative citizens of the future able to flourish in whichever environment or profession they choose. We want children to develop positive mathematical habits and perceptions that help them to achieve throughout their life. We want to develop children who know how to protect everyone in God’s world.

We want our pupils to know how to use strategies and methods taught to solve problems and to be confident when reasoning to use the language of maths to reason their ideas with, or at times, against those presented to them.

We want to give children the skills and confidence to become competent and effective problem solvers to set them up for their future both in secondary school and in life. We want them to have resilience not just within Maths lessons but all timetabled lessons. To persevere to complete a task and to try all options to complete the work set. By providing the children with a high-quality maths education, they will be able to apply their skills in a variety of subjects across the whole-curriculum.

We aim to enable our pupils to demonstrate their own individual flair and confidence in their abilities, communication and potential. To believe in their own ideas but also to recognise the individuality in others- that not all people must follow the same path. Our children will also accept that the views of others will often help them to build their own individual path.

We believe that Mathematics isn't always a subject for individual work- teamwork and collaborative discussion is essential to building reasoning and making connections. We want to foster an environment of polite discussion, where ideas can be debated and discussed and children are exposed to solutions being sought collaboratively and in well—modelled, teacher-led discussions. We want our children to be supportive and receptive to the ideas of others and to sensitively handle ideas that contrast with their own.

Our maths curriculum is ambitious and engaging and provides the opportunity for all children, including disadvantaged pupils and those with SEND, to access reasoning and problem solving to develop their learning at their level of attainment. To ensure all pupils excel, teaching and learning is ambitious, with appropriate vocabulary, strategies and methods modelled by our teaching staff. This will enable our children to progress to experience success with the mathematics.

Implementation

In Mathematics, we implement an inclusive curriculum that meets the statutory requirements of the National Curriculum. We use **White Rose Maths** as a spine in KS1 and KS2 with a long-term plan that also has links to teaching content, guidance and materials to ensure that our teachers have access to high quality, subject association approved resources. Our EYFS year groups work from the **Development Matters**, which are included in our long-term plan. Each year group's objectives are mapped from age 3-4 to Year 6, with language and associated examples of reasoning provided for teachers to support the development of pupils.

Maths is taught daily and discretely. However, where possible, Maths is taught through other subjects to encourage cross-curricular links. The outcomes expected, sequence of steps and the problem-solving approach are detailed in the WRM Scheme of Learning for each block. This structure supports the children in recognising relationships and making connections, especially in the real-world – real-life examples of using and applying maths. Each year group has a long-term plan which clearly shows the block to be taught each term. As each block is split into small steps, which are taught in sequence, an estimation of how long block will be taught is planned by the class teacher.

Each lesson has a clear learning objective that is focused on the skill being taught in that step. As part of their lesson, children complete a short task to reap previous learning called a Flashback 4. Depending on the age of the class these are completed as a class or individually.

Once the initial teaching of the step is delivered, children complete questions in their WRM workbooks, which are appropriately adapted and scaffolded as needed. For those children who are working below their age expectation in an area, they may be working on outcomes from previous year groups to fill in their gaps before building on this to accelerate progress and understanding. For those children who are confident in their subject knowledge, opportunities to extend their thinking and provide challenge is carried out through further mathematical investigations and problem solving.

It is important that children are allowed to explore Maths and present their findings not only in a written form but also visually, White Rose Maths uses concrete, pictorial and abstract to secure understanding throughout each block . This allows the children to

experience the physical aspects of Maths before finding a way to present their findings and understandings in a visual form before relying on the abstract numbers.

Concrete understanding is the crucial level needed for a new concept or maths skill to be built upon – resources such as Unifix, Dienes, counters, real-life objects can be used.

Pictorial understanding is developed mainly through the WRM workbooks, using a range of pictorial representations to allow children opportunity to develop understanding. This includes the use of Bar Models which is a pictorial approach to represent a problem or concept where bars or boxes are used to represent known and unknown quantities – this is used to solve number problems.

The abstract can only happen if the children have a secure understanding of both the concrete and pictorial, as it allows them to widen their understanding and generalisations through reasoning.

Fluency

We also develop fluency as this is a fundamental aspect of mathematics, ensuring that pupils have conceptual understanding and are able to recall and apply their knowledge rapidly and accurately. We support our children to recognise patterns, form predictions and present or articulate their findings. A fluent child in maths isn't shown by a child being able to merely recall facts e.g. $3 \times 4 = 12$ but by our children being able to use key facts to reason what might not yet be known e.g. *using $3 \times 4 = 12$ to find 30×4 , 30×40 etc.*

Children become confident in the two types of fluency:

Conceptual fluency: For example, exploring the five strands of place value, (counting, recognition of cardinal numbers, knowing what each digit in a number represents, understanding our base-10 structure and exchanging), what an equivalent fraction is and identifying key features of different representations of data. Conceptual fluency requires our children to understand these ideas and to recognise them presented in different ways.

Procedural fluency: For example, $+$ - \times \div calculation methods linked to whole numbers, fractions and decimals and exploring step-by-step mental and written methods. Procedural fluency takes what has been learned and slowly expands upon it e.g. $3 \times 2 = 6$, $3 \times 20 = 60$, $3 \times ? = 600$.

Children are given regular opportunities to recall known facts, develop number sense, know why they are doing what they are doing and know when it is appropriate and efficient to choose different methods and will apply skills to multiple contexts e.g. multiplying and dividing by 10 to convert units of measurements.

Reasoning and problem solving

Reasoning and problem solving is planned and interwoven into the mathematics curriculum as part of the White Rose Maths Scheme and can be delivered within a session or activity or as a stand-alone activity or lesson following fluency work. Reasoning

questions are explicitly taught and modelled through the use of discussion, maths partner talk, manipulatives, written words using 'stem sentences' and teacher-led, worked examples. We also believe that problem solving doesn't just happen by chance so this too is explicitly taught with a teacher commentary throughout to model the reasoning and problem solving taking place to the whole class. Cross-curricular learning is a vital driver of mathematical learning objectives and key cross-over moments are identified by teaching staff to ensure that children are able to apply mathematical application in other areas of the curriculum.

Times Tables

Multiplication and division facts aid the learning of Maths. Children who have a sound and secure knowledge of these vital facts are able to apply them to other areas of Maths with ease and therefore they do not create a barrier to their learning and progression in Maths. With this in mind, coupled with the Year 4 multiplication check, multiplication and division has become a focus.

In KS2 times table and division facts are taught alongside the daily Maths lessons. This can be taught in any way that fits the learning styles and timetable of the year group. Times Tables Rockstars is an online program that encourages the children to learn, recall and compete against their peers – it creates a buzz of excitement amongst the children. Certificates are given out in celebration worships and then displayed in our main corridor to celebrate the children's successes.

Resources and Displays

Each classroom will have maths resources that are accessible for the children to use as needed. Children are encouraged to select and use resources which they feel would be beneficial to help them when completing tasks, especially, where appropriate real-life concrete objects. Each classroom has a display dedicated to Maths; this could be in the form of a working wall, strategy board or problem-solving area.

Impact

Our children will be fluent and confident mathematicians who enjoy the subject and are curious about their learning. Our children will use the language of mathematics appropriately and in the right contexts when reasoning, displaying a confidence with its use that has been supported by consistency in teaching across the school. They will be enthusiastic, resilient, and inquisitive problem-solvers, able to tackle tasks in systematic ways when required alongside recognising the need for trial and improvement. Our children understand that a failure to find the solution immediately presents a learning opportunity rather than an insurmountable obstacle. Our children interact with each other, and our staff, in a respectful, nurturing manner when questioning problems or ways of working, and will be able to act promptly and calmly upon feedback received. Our children will perform consistently well in Mathematics and are well prepared for the next stage in their education.