



The teaching and learning of mathematics is an integral element of our school curriculum and it is taught in classrooms where children are supported, guided and encouraged to achieve their maximum potential in challenging but achievable lessons. Our planning stems from the long-term plans laid out by White Rose Maths but all teaching resourcing and learning materials have been tailored to follow a consistent 'I Do, We Do, You Do' learning routine, which provides us with the platform to meet the learning needs of all of our children.

Children's understanding is consolidated, developed and extended:

- in arithmetic lessons.
- in maths lessons.
- using wide and varied concrete, pictorial and graphical representations.
- in progressive maths lessons which build upon previously laid foundations.
- through carefully selected homework tasks on websites and online learning applications.

# Curriculum design and sequencing of content

Each year group follows a carefully designed long-term plan, which is fully in line with the expectations laid out in the Primary Curriculum and ensures learning objectives build upon prior learning from previous year groups. Each member of our teaching team support children of all abilities to develop depth to their understanding so they can apply their methods, skills and knowledge in progressively more challenging contexts.

In the Foundation Stage, children's understanding is scaffolded through exploration in real-life play. As children become increasingly familiar with and make sense of the concepts of number and shape, they will be provided with varied concrete and pictorial resources and challenges.

From Year 1 through to Year 6, all planning (both short and long term) stems from the White Rose schemes of work, which are nationally recognised schemes of work and fully in line with the Primary Curriculum. Our teachers have taken the White Rose daily teaching presentations and used these as the backbone to produce carefully crafted presentations, which fall in line with our whole school 'I Do, We Do, You Do' learning routine. This routine enables our children to develop their understanding using a consistent approach and for teachers to make daily formative assessments as to which independent tasks each child should engage with. Throughout each lesson, teachers and pupils interact using a 'ping-pong' approach and with access to a wide array of concrete and pictorial resourcing.

## **Arithmetic**

From Year 1 through to Year 4, all pupils engage in 3 arithmetic lessons per week, whilst pupils in Years 5 & 6 engage in 5 sessions per week. All arithmetic sessions serve the clear and distinct purpose of supporting all pupils, irrespective of ability, on their journey to becoming number-fluent. From an early age, children work hard to develop a strong sense of what each number means and exploring the many connections between each of the numbers so when concepts become increasingly more abstract, they have their secure understanding to scaffold new learning. The sessions each year group engage in cover age-appropriate material and the right balance is struck between teacher led sessions and sessions which provide children with the time and resourcing to develop and embed their understanding and skills. Our ultimate goal is for children to leave our school having developed a secure, efficient and confident understanding and grasp of the relationships between numerical values.

#### Number fluency - number bonds

At the core of our approach to the teaching of both arithmetic and mathematics is our ambition for all children to become 'number-fluent'. At the very heart of this target is the need for all pupils to develop a secure grasp of their number bonds. Our teachers in FS and KS1 work tirelessly to support children in achieving this goal through carefully crafted lessons and making meaningful and purposeful use of the Numbots application.

## Number fluency - times-tables

As children work towards their goal of becoming 'number-fluent', we support pupils to develop an efficiency with their times-table recall. Across the school, wide and varied methods are used to support all types of learners: songs are learnt; rules are taught; timed challenges are set. If there is a strategy out there – we use it! We have found Times-Table Rockstars to be a highly popular application, which provides pupils with a platform to embrace their competitive side and is a highly effective tool in supporting children to develop their speed of recall. Both teaching staff and children can track and develop individual pupil development and the application has in-built algorithms which identify the developmental times-tables facts each child needs to be working on. Additionally, as a school, weekly competitions are planned for and set, which provide further motivation for the children to engage with the application. The data provided by the application enables teachers to pinpoint specific times-tables which need to be addressed on an individual, group and whole class basis.

## Mastery Approach and Reasoning in Mathematics

All staff teach mathematics using the 'Mastery Approach'. The core principles of the 'Mastery Approach' ensure children secure and build upon their understanding, methods and skills so they develop a deeper grasp of how to apply their knowledge in a wide and varied range of contexts. Pupils learn and develop their skills and knowledge using concrete and pictorial resourcing before moving onto more abstract and complex concepts. Within each lesson, each teacher's focus is firmly upon developing a depth to each child's understanding rather than pushing students onto the next year's curriculum when they don't have a true or secure grasp of their age-related objectives. Put simply - mathematical knowledge without the awareness of how and when to apply it is quite useless!

## Mathematical Vocabulary and Stem Sentences

From the Foundation Stage through to Year 6, children are taught age-appropriate mathematical vocabulary to ensure that maximum progress is not prevented due to a lack of familiarity with terminology. It is of paramount importance this is achieved throughout the school because at the end of the primary years, the children will need to be familiar with and comfortable using multiple terms, interchangeably, for the same meaning i.e. times, multiplied by, lots of, groups of, product of. In each lesson, children are required to explain their thinking and understanding in 'stem sentences' using age-appropriate mathematical language and with clarity. This is only possible when teachers model and children practise using the relevant and appropriate mathematical language, in context, on a daily basis. Therefore, each lesson, children will be taught and actively encouraged to use their 'stem sentences', which are either partially completed sentences or statements of understanding. The mathematical terminology and stem sentences are shared with the children on in the teaching and learning presentations.

## Challenge for ALL children

Every lesson, teachers use their in-lesson formative assessments (part of our 'I Do, We Do, You Do' learning routine) to decide which 'Step' worksheet a child should engage with. Irrespective of which 'Step' a child engages with, learning will be deepened through engagement with wide ranging tasks, targeting a specific 'small-step' of knowledge, which was carefully considered and planned to support children on their journey towards 'mastering' the small step learning objective. The wide-ranging tasks can be represented in many ways:

- $\checkmark$  worded and contextual questions
- $\checkmark$  questions which are presented pictorially
- ✓ always, sometimes, never questions
- $\checkmark$  true or false and why questions
- $\checkmark$  which is the odd one out and why
- ✓ children identify missing values
- ✓ completing Carroll and/or Venn Diagrams
- adopting the role of the teacher and providing written feedback when a question has been completed incorrectly (teacher has modelled a common error / misconception)