

## Intent of the Maths Curriculum

The central aim of our school curriculum is to develop the whole child and shape their minds for positive learning experiences about the world around them. We strongly believe in encouraging curiosity, exploration and developing a strong sense of self-identity.

Mathematics is a creative subject that lends itself to so many other disciplines, therefore, over the centuries it has provided some responses to some of history's most fascinating problems. Mathematical knowledge, and the skills acquired through developing an understanding of these, is vital for everyday life. Likewise, the subject is critical to science, technology and engineering, and necessary for financial literacy and most forms of employment. Without a high-quality mathematical education, children are sent into the world ill-equipped for life.

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, inferring 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 significance of mathematics being put into real-life contexts cannot be over-stressed. It is through these challenges that the children can gain a truer sense of maths, which is not something that you are simply 'good' or 'bad' at, but more a subject which is about the journey of getting to a solution. The way to get to the 'answer' can be as creative and diverse as narratives in English.

In order to ensure that all children, no matter of starting points, progress and are challenged, they need access to concrete, pictorial and abstract (CPA) resources. By using this approach to scaffold and challenge the children appropriately, all can be working from a learning intention that is suitably taken from the curriculum but can be accessed independently. To promote the use of mathematical language, KAGAN cooperative learning routines are added to planning when applicable to provide children with the opportunities to share learning and a platform for all to share (not just the more able or confident). Long term plans should be structured so that associations can be made from prior learning to the next steps. These are used in conjunction with NCETM progression maps

so that teachers are aware of previous and post year group expectations. Rapid graspers are challenged through deeper learning challenges that offer rich and sophisticated reasoning and problem solving, whereas those who need more time to practice fluency, have the time through assessment for learning opportunities in or post lesson.

To enable children to progress, a consistent approach is necessary. In order to support this, a mastery approach has been taken across the Spire Junior School, which is aided by Maths Hub South Yorkshire. Moreover - to keep consistency throughout school - a 'Spire Always' vocabulary list has been created, so that all children are familiar with helpful rhymes and mnemonics that are echoed throughout Key Stage Two.

It is crucial that children understand the importance of the discipline and see that it is valued by all, therefore, achievement and participation in the subject is celebrated. This takes place, in our Friday assembly with the top three children in Times Tables Rockstars (an online and fun learning platform) receiving awards. Also, all children who play add to our school remaining in the top 10 spot of the completion between local schools. We strive to reach a place within the top 5 positions! Children are encouraged to play Times Tables Rockstars in a wide variety of environments and when they do, they are asked to have this photographed, where the photograph will then be added to our display. Children are further incited to interact with mathematics outside of school by adding numbers for in the community to our real life one hundred square in school.

### Implementation of the Maths Curriculum

Our curriculum at Spire is carefully planned and organised so as to promote a deep understanding of the projects and concepts that we cover through quality first teaching. We do this by equipping our pupils with the skills and qualities they need to thrive both within the curriculum and within the wider-world.

At Spire Junior School, Children study mathematics daily covering a broad and balanced mathematical curriculum including elements of number, calculation, geometry, measures and statistics. Within these daily maths sessions, 6 in 6 (6 mathematic questions completed in 6 minutes) activities are completed to build fluency and precision and to think about numbers in a different way. Due to the interconnected nature of mathematics, at Spire Junior School we aim to teach maths in a cross curricular manner as well as discretely to teach the practical application of mathematical skills. We focus not only on the mathematical methods but also emphasise mathematical vocabulary and to use Maths Mastery to broaden and deepen mathematical understanding.

We aim for each child to be confident in each yearly objective and develop their ability to use this knowledge to develop a greater depth understanding to solve varied fluency problems as well as problem solving and reasoning questions. We use a range of textbooks and online resources throughout the school to ensure a curriculum that is specific to each child's learning needs. All children have a Times Tables Rockstars account and they are encouraged to access this online programme at home, which aims to build pupil engagement and consolidate vital times-tables knowledge. This programme also aids children to prepare for an online multiplication tables check (MTC) to year 4 pupils, which became statutory for children in the academic year 2019/20. The purpose of the MTC is to determine whether pupils can recall their times tables fluently, which is essential for future success in mathematics. It will help schools to identify pupils who have not yet mastered their times tables, so that additional support can be provided.

### Lower Key Stage 2

The National Curriculum (2014) states that:

The principal focus of mathematics teaching in lower key stage 2 is to ensure that pupils become increasingly fluent with whole numbers and the four operations, including number facts and the concept of place value. This should ensure that pupils develop efficient written and mental methods and perform calculations accurately with increasingly large whole numbers.

At this stage, pupils should develop their ability to solve a range of problems, including with simple fractions and decimal place value. Teaching should also ensure that pupils draw with increasing accuracy and develop mathematical reasoning so they can analyse shapes and their properties, and confidently describe the relationships between them. It should ensure that they can use measuring instruments with accuracy and make connections between measure and number.

By the end of year 4, pupils should have memorised their multiplication tables up to and including the 12-multiplication table and show precision and fluency in their work.

Pupils should read and spell mathematical vocabulary correctly and confidently, using their growing word reading knowledge and their knowledge of spelling.

### Upper Key Stage 2

The National Curriculum (2014) states that:

The principal focus of mathematics teaching in upper key stage 2 is to ensure that pupils extend their understanding of the number system and place value to include larger integers. This should develop the connections that pupils make between multiplication and division with fractions, decimals, percentages and ratio.

At this stage, pupils should develop their ability to solve a wider range of problems, including increasingly complex properties of numbers and arithmetic, and problems demanding efficient written and mental methods of calculation. With this foundation in arithmetic, pupils are introduced to the language of algebra as a means for solving a variety of problems. Teaching in geometry and measures should consolidate and extend knowledge developed in number. Teaching should also ensure that pupils classify shapes with increasingly complex geometric properties and that they learn the vocabulary they need to describe them.

By the end of year 6, pupils should be fluent in written methods for all four operations, including long multiplication and division, and in working with fractions, decimals and percentages.

Pupils should read, spell and pronounce mathematical vocabulary correctly.

If children are identified to be working below current year group expectations, the intervention of Number Stacks is completed in pairs on a weekly basis for an hour per pair with a teaching assistant (TA). Furthermore, class teachers and TAs will target children before, during and after lessons to conduct AfL (assessment for learning) activities. As well as this, Spire Junior School is taking part in an Arithmetic and Working Memory study (Oxford University funded) and a Year 3 TA completes an hour session each week with Year 3 children to improve memory and Arithmetic skills.

### Impact of the Maths Curriculum

We are confident our curriculum is successful in the teaching and learning of reading through a variety of monitoring and feedback activities which have taken place through school.

Throughout each lesson formative assessment takes place and feedback is given to the children through marking and, where necessary, next step tasks to ensure they are meeting the specific learning intention. Teacher's then use this assessment to influence their planning and ensure they are providing a mathematics curriculum that will allow each child to progress. The teaching of maths is also monitored on a termly basis through book scrutinies, learning walks and lesson observations. Each term children complete a

summative assessment (NFER with the exception of Year 6, who use a combination of previous SATs papers and NFERs) to help them to develop their testing approach and demonstrate their understanding of the topics covered. The results from both the formative assessment and summative assessment are then used to determine children's progress and attainment which is added to an online programme which can generate patterns and trends. Within school, the summative data is tracked on Insight whereby analysis can be completed.

When the Maths Coordinator undertook an NPQML, data across the years 3-6 showed an upward trend from baseline Year 3 data to Summer of the last year groups data. Moreover, on a recent monitoring visit conducted by the Local Authority it was stated that 'effective monitoring strategies to assess impact' were being developed and utilised.

The expectation is that the majority of pupils will move through the programmes of study at broadly the same pace. However, decisions about when to progress should always be based on the security of pupils' understanding and their readiness to progress to the next stage. Pupils who grasp concepts rapidly should be challenged through being offered rich and sophisticated problems before any acceleration through new content. Those who are not sufficiently fluent with earlier material should consolidate their understanding, including through additional practice, before moving on.

When the Maths Coordinator conducted a book scrutiny it was seen that all year groups consistently use 6in6s to reinforce fluency and problem solving and reasoning was regularly incorporated into lessons. Moreover, a variety of pictorial representations are used by the children to help scaffold the learning.

Children who regularly access TTRockstars and Maths EdShed have the chance to win a prize in the celebration assembly as one is given out for highest number of points in LKS2 and UKS2. There have been an increased number of points across the year groups with children completing more Maths based activities at home this academic year, and this is widely encouraged and supported through school and by our families. Staff monitor and track who needs additional time to complete TTRockstars and EdShed in school time.