Progression Documents

Mathematics

Curriculum Overview:

Learning for life

We are CONFIDENT COMMUNICATORS who listen and share our ideas confidently.
We are RESILIENT RESEARCHERS who don't give up and learn from our mistakes.
We are ASPIRATIONAL AMBASSADORS who strive to be the best we can be.
We are COLLABORATIVE CITIZENS who work together and respect others.

Intent	Implementation	Impact
Early years Foundation Stage: In EYFS the framework is organised across 7 areas of learning rather than subject areas. As part of this document we have planned how the skills taught across EYFS feed into the national curriculum and which statements from the 2020 Development Matters are prerequisite skills for mathematics within the National Curriculum. **KS1 and KS2:** In KS1 and KS2 the mathematics curriculum has been designed to cover all of the skills, knowledge and understanding as set out in the National Curriculum. The National Curriculum states that 'a high-quality mathematics education provides a foundation for understanding the world, the ability to reason mathematically, an appreciation of the beauty and power of mathematics, and a sense of enjoyment and curiosity about the subject'. To ensure that pupils develop a secure knowledge that they can build on, our mathematics curriculum has been mapped out using the specific disciplines. When covering each of these strands, the content will be carefully organised by each year group through our subject overview. Content knowledge, vocabulary and skills will then be planned for at a greater level of detail in the Year group Frameworks. Mathematics is delivered through subject specific teaching organised into blocks under a theme. Meaningful links with other subjects are made to strengthen connections and understanding for pupils.	The Early years Foundation Stage (EYFS) follows the 'Development Matters' in the EYFS guidance. In EYFS mathematics is taught as part of 'mathematics' through 'Number' and 'Numerical Patterns' and will be seen as part of the continuous and adult lead provision across the classroom, not as a discrete subject. In KS1 and KS2, mathematics is taught as a discreet subject every day to allow time to embed skills in the subject. The core teaching of mathematics is through the 'DFE approved 'White Rose' mathematics scheme and adapted to meet the needs of the learners in our school. All learning will start by revisiting prior knowledge. This will be scaffolded to support children to recall previous learning and make connections. Staff will model explicitly the subject-specific vocabulary, knowledge and skills relevant to the learning to allow them to integrate new knowledge into larger concepts. Learning will be supported through the use of knowledge organisers that provide children with scaffolding that supports them to retain new facts and vocabulary in their long-term memory. Knowledge organisers are used for pre-teaching, to support home learning and also as a part of daily review.	Impact is measured through regular learning walks, lesson visits, work scrutiny and pupil voice. Work will show that a range of topics are being covered as well as progression across each unit of work in every year group and across year groups. Children will be able to talk about the skills and knowledge they have acquired, through pupil voice, and will be engaged in lessons and want to find out more. Teachers will use Assessment for Learning to ensure all lessons are relevant and will help to plan for next steps. Subject coordinators will be given regular time to ensure resources are kept up to date, to monitor their subject across the school, create action plans and impact reports and to provide subject feedback to SLT as appropriate.

Breadth of study

Breadth of study Key Stage 1:

The principal focus of mathematics teaching in key stage 1 is to ensure that pupils develop confidence and mental fluency with whole numbers, counting and place value. This should involve working with numerals, words and the four operations, including with practical resources [for example, concrete objects and measuring tools].

At this stage, pupils should develop their ability to recognise, describe, draw, compare and sort different shapes and use the related vocabulary. Teaching should also involve using a range of measures to describe and compare different quantities such as length, mass, capacity/volume, time and money.

By the end of year 2, pupils should know the number bonds to 20 and be precise in using and understanding place value. An emphasis on practice at this early stage will aid fluency.

Pupils should read and spell mathematical vocabulary, at a level consistent with their increasing word reading and spelling knowledge at key stage 1.

Breadth of study Lower KS2:

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.

Breadth of study Upper KS2

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.

Breadth of study
Breadth of study EYFS:

Mathematical Vocabulary			
Three and Four-Year-Olds	Communication and Language		• Use a wider range of vocabulary. • Understand 'why' questions, like: "why do you think the caterpillar is so fat?"
Reception	Communication and Language		• Learn new vocabulary. • Use new vocabulary throughout the day.
ELG	Communication and Language	Speaking	• Participate in small group, class and one-to-one discussions, offering their own ideas, using recently introduced vocabulary.

Number and Place Value			
Counting			
Three and Four-Year-Olds	Mathematics		• Recite numbers past 5. • Say one number name for each item in order: 1, 2, 3, 4, 5. • Know that the last number reached when counting a small set of objects tells you how many there are in total ('cardinal principle').
Reception	Mathematics		• Count objects, actions and sounds. • Count beyond ten.
ELG	Mathematics	Numerical Patterns	• Verbally count beyond 20, recognising the pattern of the counting system.
Identifying, Representing and Estimating Numbers			
Three and Four-Year-Olds	Mathematics		• Develop fast recognition of up to 3 objects, without having to count them individually ('subitising'). • Show 'finger numbers' up to 5. • Link numerals and amounts: for example, showing the right number of objects to match the numeral, up to 5. • Experiment with their own symbols and marks as well as numerals.
Reception	Mathematics		• Subitise. • Link the number symbol (numeral) with its cardinal number value.
ELG	Mathematics	Number	• Subitise (recognising quantities without counting) up to 5.
Reading and Writing Numbers			
Three and Four-Year-Olds	Mathematics		• Link numerals and amounts: for example, showing the right number of objects to match the numeral, up to 5. • Experiment with their own symbols and marks as well as numerals.
Reception	Mathematics		• Link the number symbol (numeral) with its cardinal number value.
Compare and Order Numbers			
Three and Four-Year-Olds	Mathematics		• Compare quantities using language: 'more than', 'fewer than'.
Reception	Mathematics		• Compare numbers.
ELG	Mathematics	Numerical Patterns	• Compare quantities up to 10 in different contexts, recognising when one quantity is greater than, less than or the same as the other quantity.
Understanding Place Value			
Reception	Mathematics		• Understand the 'one more than/one less than' relationship between consecutive numbers. • Explore the composition of numbers to 10.
ELG	Mathematics	Number	• Have a deep understanding of numbers to 10, including the composition of each number.
Solve Problems			
Three and Four-Year-Olds	Mathematics		• Solve real world mathematical problems with numbers up to 5.

Addition and Subtraction			
Mental Calculations			
Reception	Mathematics		• Automatically recall number bonds for numbers 0-5 and some to 10.
ELG	Mathematics	Number	• Automatically recall (without reference to rhymes, counting or other aids) number bonds up to 5 (including subtraction facts) and some number bonds to 10, including double facts.
Solve Problems			
ELG	Mathematics	Numerical Patterns	• Explore and represent patterns within numbers up to 10, including evens and odds, double facts and how quantities can be distributed evenly.

Measurement		
Describe, Measure, Compare and Solve (All Strands)		
Three and Four-Year-Olds	Mathematics	• Make comparisons between objects relating to size, length, weight and capacity.
Reception	Mathematics	• Compare length, weight and capacity.

Telling the Time		
Three and Four-Year-Olds	Mathematics	• Begin to describe a sequence of events, real or fictional, using words, such as 'first', 'then…'

Properties of Shapes		
Recognise 2D and 3D Shapes and their Properties		
Three and Four-Year-Olds	Mathematics	• Talk about and explore 2D and 3D shapes (for example, circles, rectangles, triangles and cuboids) using informal and mathematical language: 'sides', 'corners', 'straight', 'flat', 'round'. • Select shapes appropriately: flat surfaces for a building, a triangular pattern for a roof, etc. • Combine shapes to make new ones – an arch, a bigger triangle, etc.
Reception	Mathematics	• Select, rotate and manipulate shapes in order to develop spatial reasoning skills.
Compare and Classify Shapes		
Reception	Mathematics	• Compose and decompose shapes so that children can recognise a shape can have other shapes within it, just as numbers can.

Position and Direction		
Position, Direction and Movement		
Three and Four-Year-Olds	Mathematics	• Understand position through words alone – for example, "The bag is under the table," – with no pointing. • Describe a familiar route. • Discuss routes and locations, using words like 'in front of' and 'behind'.
Reception	Understanding the World	• Draw information from a simple map.
Patterns		
Three and Four-Year-Olds	Mathematics	• Talk about and identify the patterns around them. For example, stripes on clothes, designs on rugs and wallpaper. Use informal language like 'pointy', 'spotty', 'blobs', etc. • Extend and create ABAB patterns – stick, leaf, stick, leaf. • Notice and correct an error in a repeating pattern.
Reception	Mathematics	• Continue, copy and create repeating patterns.

Statistics		
Record, Present and Interpret Data		
Three and Four-Year-Olds	Mathematics	• Experiment with their own symbols and marks, as well as numerals.