



Mathematics Curriculum

“Pure mathematics is, in its way, the poetry of logical ideas.” **Albert Einstein**

INTENT	
 Alignment to National Curriculum	At Abbey Primary School, the mathematics curriculum meets the requirements of the National Curriculum's Programmes of Study for Key Stages 1 and 2. It is an interconnected discipline that provides: a foundation for understanding the world, the ability to reason mathematically, an appreciation of the beauty and patterns within mathematics and curiosity and enjoyment of the subject. In line with the National Curriculum, our aims for our children are: Fluency: To become fluent in the fundamentals of mathematics through varied and frequent practice with increasingly complex problems. This builds pupils' conceptual understanding so that they can recall and apply their knowledge rapidly and accurately to problems. Reasoning: To reason mathematically by following a line of enquiry; analysing relationships and making generalisations to develop an argument that can be justified or proven using the correct mathematical language. Problem-Solving: To solve problems by applying 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.
 Curriculum End Points	By the end of the Early Years Foundation Stage pupils: - Have a deep understanding of number to 10, including the composition of each number - Subitise (recognise quantities without counting) up to 5 - 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 - Verbally count beyond 20, recognising the pattern of the counting system - Compare quantities up to 10 in different contexts, recognising when one quantity is greater than, less than or the same as the other quantity; - Explore and represent patterns within numbers up to 10, including evens and odds, double facts and how quantities can be distributed equally. - Talk about the properties of shape and patterns using vocabulary to describe position, direction and movement. - Estimate, measure, weigh and compare and order objects. By the end of Key Stage 1 pupils (Years 1 and 2) pupils: - Develop confidence and mental fluency with whole numbers, counting and place value - Work with numbers (to at least 100) – numerals and words - Calculate using the four operations (practical resources support their understanding) - Recall and use multiplication and division facts: 2, 5 and 10 times tables - Recognise, describe, draw, compare and sort 2D and 3D shapes using related vocabulary - Use a range of measures to describe and compare different quantities such as length, mass, capacity/volume, time and money - Know the number bonds for numbers to 20, applying their knowledge of place value - Read and spell mathematical vocabulary at a level consistent with their word reading and spelling knowledge at Key Stage 1 By the end of Lower Key Stage 2 (Years 3 and 4) pupils: - Order and compare numbers beyond 1000 - Become increasingly fluent with whole numbers and the four operations, including number facts and place value - Develop efficient written and mental methods to perform calculations accurately with increasingly large whole numbers. - Solve a range of problems, including with simple fractions and decimal place value - Draw shapes with increasing accuracy and develop mathematical reasoning so that they can analyse their properties and describe the relationships between them - Use measuring instruments accurately and make connections between measure and number - Know, from memory, multiplication tables up to 12 x 12 - Read and spell mathematical vocabulary correctly, using their growing word reading knowledge and their knowledge of spelling By the end of Upper Key Stage 2 (Years 5 and 6) pupils: - Read, write, order and compare numbers to at least 10,000,000 and determine the value of each digit - Extend their understanding of the number system and place value to include larger integers (whole numbers) - Develop the interconnections between multiplication and division in fractions, decimals, percentages and ratio - Solve a wider range of problems, including increasingly complex properties of numbers and arithmetic, and problems demanding efficient written and mental methods of calculation - Begin to understand the language of algebra to solve problems - Use and develop their knowledge of number in the context of 'geometry' and 'measures' - Draw, compose and decompose shapes according to given properties – including dimensions, angles and area - Classify shapes with increasingly complex geometric properties and learn the vocabulary needed to describe them - Gain fluency in written methods for all four operations, including long multiplication and division - Gain fluency when working with fractions, decimals and percentages - Read, spell and pronounce mathematical vocabulary correctly



Sequencing

In the EYFS, songs, stories and rhymes are carefully chosen to teach and embed key mathematical concepts. Daily maths sessions teach new concepts with a sharp focus on number. Pupils are encouraged to further explore and develop these in their independent learning.

Children in the Foundation Stage and Key Stage 1 all take part in daily 'Mastering Number' sessions which embed the foundations of number sense and fluency in number facts. This ensures that children leave Key Stage 1 equipped for fluency in calculation and a confidence and flexibility with number.

Mathematical learning is derived from the long-term plans advocated by the White Rose Maths Hub. A carefully sequenced curriculum takes the main learning objectives from the National Curriculum and organises them into blocks of key content across each term. These blocks e.g. Place Value, Fractions etc. are revisited at least once per year, in increasing depth. Pupils revisit prior learning before mastering new content to support the committal of knowledge to long-term memory - this enables them to achieve deeper understanding. Small steps of learning, within lessons, and across sequences of lessons, enable pupils to practise new content until they have achieved automaticity.

Specific vocabulary is identified and explicitly taught to maximise pupils' progress and participation and inclusion in all aspects of the subject.

Across school, from the EYFS, 'keep up, not catch up' approach ensures that pupils thoroughly understand and remember what is taught before they move on. Where further exposure to a concept is required, the pace of teaching is adapted so that further practice can take place - an inclusive approach that benefits all pupils.

Further challenge is presented to the children in the form of 'Going Deeper' tasks which require them to apply their learning in wider contexts with related problems and investigations to solve. Within these, pupils are taught to reason and make mathematical explanations, drawing on well-developed vocabulary.

The curriculum has been sequenced to ensure that children have the mathematical knowledge required to succeed in wider curriculum subjects such as geography, science and design and technology.



Mathematics for All

Mathematics is taught drawing upon the Concrete, Pictorial, Abstract Approach (CPA). This supports children to understand the abstract concepts of mathematics. The approach builds knowledge by introducing new learning in a concrete and tangible way. It involves moving from concrete objects to pictorial representations, to abstract symbols and problems.

Concrete Stage: The "doing" stage. During this stage, children use concrete objects to model problems. This brings concepts to life by allowing them to experience and handle physical (concrete) objects. New concepts are first introduced using physical, interactive concrete objects e.g., if a problem involves adding pieces of fruit, children first handle fruit, before progressing to handling counters or cubes which represent the fruit.

Pictorial Stage: Pictorial is the "seeing" stage. Here, visual representations of concrete objects are used to model problems. This stage encourages children to make a mental connection between the physical objects they have handled and the pictures, diagrams or models that represent the objects. Building or drawing a model makes it easier for children to grasp difficult abstract concepts (for example, fractions). This helps children to visualise abstract problems and makes them more accessible.

Abstract Stage - Abstract is the "symbolic" stage, where children use abstract symbols to model problems. Children progress to this stage once they have demonstrated a secure understanding of the concrete and pictorial stages of the problem. The abstract stage involves the introduction of abstract concepts (e.g. mathematical symbols). Children are introduced to the concept at a symbolic level, using only numbers, notation, and mathematical symbols (for example, +, -, x, /) to indicate addition, multiplication or division.

A 'keep up, not catch up' approach ensures that pupils understand and remember what is taught before moving on. This approach supports all pupils, including those with SEND. Pre-teaching and timely interventions support pupils in 'keeping up' with their peers. For children working well below age-related expectations, precision teaching focuses on identified key knowledge and aims to target specific gaps.

Pupils with SEND: Following careful identification of pupils' barriers, pupils with SEND access the same curriculum as their peers with support and sensitive adaptations. Where it is evident that pupils have gaps in their pre-requisite knowledge, pupils may be taught separate content.

Extra-curricular Clubs: These are selected and directed to enhance the mathematics curriculum for a range of purposes including: instilling a love and curiosity about mathematics and boosting pupils' confidence and ability in specific areas.

Our Mathematics curriculum develops pupils who:

- Feel confident with numbers and have a secure understanding of place value
- Are effective problem-solvers, able to apply their knowledge to a range of problems and other contexts
- Can reason mathematically by following lines of enquiry, conjecturing (arriving at a conclusion based on the information gleaned), and justifying or proving their thinking
- Accurately use a wide range of mathematical vocabulary when making explanations
- Enjoy and appreciate the inherent beauty of mathematics

