

Maths Rationale

National Curriculum Aims for Maths

- 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, conjecturing 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.

National Curriculum Purpose for Maths

Mathematics is a creative and highly inter-connected discipline that has been developed over centuries, providing the solution to some of history's most intriguing problems. It is essential to everyday life, critical to science, technology and engineering, and necessary for financial literacy and most forms of employment. A high-quality mathematics education therefore 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.

Mathematically Literate

Ambition is high and this begins with maths being taught from the outset in EYFS. It is one of the four specific areas within the EYFS and is divided into the following two areas:

- Numbers - children learn to count and the value of numbers, higher and lower. These skills support them to solve problems, use money and calculate more or less.
- Shape, Space and Measure - these skills support children to understand size, weight, capacity, position, distance, time and money and compare quantities, objects and solve problems.

These two areas are implemented through a mixture of direct teaching and learning opportunities that are embedded in continuous provision. Our specialist and dedicated early years environment (both indoors and out) is full of meaningful and well planned mathematical opportunities and has exciting things for children to explore, sort, compare, count, calculate and describe. This supports them to be creative, critical thinkers and problem solvers.

The focus of maths teaching in Key Stage 1 is to ensure that pupils develop confidence, mental fluency and efficiency with whole numbers, counting and place value. They should also be developing their ability to recognise, describe, draw, compare and sort different shapes, using the related vocabulary. Teaching will also involve using a range of measures to describe and compare different quantities such as length, mass, capacity, volume, time and money. Security in these core concepts is an essential foundation so that children leave KS1 with these facts embedded in their long term memories which will facilitate efficient working during KS2.

By the end of year 6, children will have developed their ability to solve a wider range of word problems, including those with increasingly complex properties of numbers and arithmetic and problems demanding efficient written and mental methods of calculation. Through repeated practice and well-crafted fluency exercises, children will have embedded core number facts, freeing up capacity in their working memories to tackle new, more difficult problems and concepts. They will be able to classify shapes with complex geometric properties and be fluent in working with fractions, decimals and percentages.

Maths Rationale

The purpose of mathematics in our federation is to equip children with the knowledge, skills and understanding to be able to understand the world around them. This includes maths skills for functional aspects of life, for example telling the time and handling money, budgeting and also maths skills which facilitate the learning of other subjects, for example geometry skills in design. This means ensuring we have a curriculum that is fully inclusive for all children which:

- Develops children's fluency, reasoning and problem solving skills – all of which are inextricably linked.
- Develops children's knowledge and understanding of mathematical concepts whilst enabling them to practise and hone skills and methods.
- Enables them to think critically and communicate their understanding to others.
- Gives them opportunities to apply learned mathematical skills, in different contexts, across the curriculum.

Intent	Implementation	Impact: to be reviewed at the end of each academic year
The mathematics curriculum is planned in a sequenced way to build knowledge, skills, understanding and mathematical vocabulary from Early Years to Year 6. The mathematics curriculum will follow a mastery approach and equip children with a deep and embedded understanding of mathematical components. The five 'ingredients' of mastery are: Small steps, variation, mathematical vocabulary, problem solving and representation and structure. The school's Calculations Policy provides a guide to how calculations using the four rules of number should be taught within each group.	Teachers plan using 'Maths No Problem' as a basis for their long term planning, ensuring sequences of units build on prior knowledge, using the mastery approach of small steps. This ensures consistency across the federation. Teachers plan lessons to create deeper understanding rather than accelerate children to new content. This is done through providing children with a range of problem solving and reasoning tasks to do. Concrete, visual and abstract resources will support children's learning ensuring components are embedded. Variation will be planned into the lessons to develop children's confidence when reasoning. Teaching of calculations will be consistent and progressive so that children build each year on a secure base.	

Knowledge and enquiry in Maths

Substantive knowledge concerns the key facts, concepts, principles and explanatory frameworks in a subject. Disciplinary knowledge needed in order to think, process and understand the subject.

Knowledge and enquiry in maths are divided into distinct areas and children need to be able to move fluidly between these and be able to make connections when solving sophisticated problems. These areas are:

- Number
- Measurement
- Geometry
- Statistics

In early years foundation stage are:

- Number
- Shape, Space and Measure

Children need substantive knowledge such as knowing their number bonds and multiplication facts in order to be able to successfully tackle more challenging concepts and ideas. Deliberate repeated practice helps children to build confidence, fluency and efficiency in order to secure this substantive knowledge into their long-term memories. Children are also taught to make links across different mathematical components to build this substantive knowledge in their long term memory. Our federation follows a mastery approach and the use of Maths No Problem as a basis for sequencing units to ensure continuity and progression and as a way of ensuring children are able to build this substantive knowledge.

Creativity in Maths

Creativity is a strong thread that permeates our mathematics curriculum. Opportunities for children to approach mathematics in different ways and to solve problems are carefully planned into each unit of work. Mathematics problem solving is a creative process and children are encouraged to show their thinking and mistakes are embraced as a part of the problem solving journey. By using this approach, children become empowered and they learn what can be possible with a strong mathematical understanding. Mathematical creativity allows children the opportunity for collaborative learning and communication through carefully planned learning activities. Children can investigate, pose questions and become creative decision makers and mathematical risk takers in an environment where it is ok to make mistakes, developing resilience and confidence.

Assessment in Maths

Tracking children's progress throughout their school life is vital in order to establish their acquisition of knowledge and skills. At the Federation of Follifoot & Spofforth, learning always starts with the children's prior knowledge and any misconceptions they may have. Class teachers decide upon the most appropriate age related way of obtaining the children's prior knowledge. Units of work are then personalised to the children.

Misconceptions that arise throughout the unit are identified and addressed appropriately by the teacher. As a Federation we are currently trialling exploring and trialling approaches to assessing children's recall of their learning to assess how effectively knowledge and skills have been embedded and mastered.

IN Early Years, assessment happens continually to collect consistent and varied evidence of mastery. This then feeds into the continuous cycle of Observation, Assessment and Planning. In addition, each half term every child is assessed on Number recognition and formation 1-20, Rote Counting to 20 and Number Formation.

Summative assessment will be in the form of termly NFER tests. These allow teachers to compare children with national expectations. They will also allow teachers to make adjustments to their provision where needed on a termly basis.

In years 2 and 6, children will be given practice SATs papers at various intervals during the school year to ensure familiarity with test style and to reduce anxiety.

In Year 2, these are typically used in the spring term.

In Year 6, these are typically used in October, February and April.

In year 4, progress towards the multiplication check test will be measured by completing practice checks in January, April and June.