Manor Junior School

Curriculum Statement – Mathematics

"Mathematics is the most beautiful and most powerful creation of the human spirit." Stefan Banach

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, 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.

Our Planning Approach

Rich task/Key Question

Check prior knowledge and recap key vocabulary.

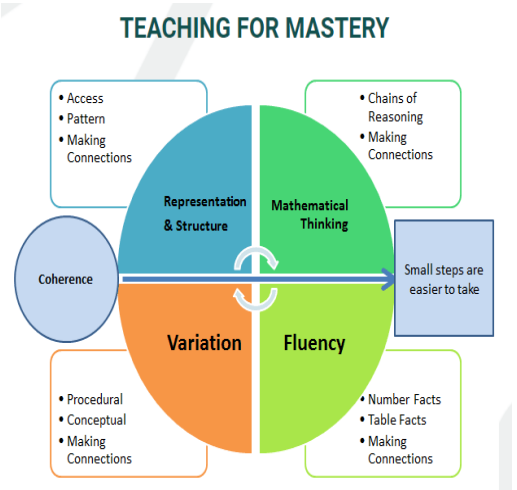
Build mathematical skills and conceptual understanding

Learn, practise and refine key skills and vocabulary then apply understanding. What is the knowledge needed to deepen understanding. Explore concepts using conceptual, pictorial and abstract approach. Make connections and spot patterns. Explain mathematical thinking and reason about the maths concepts learnt.

Apply in context

Use and apply skills that have been acquired in problems and new contexts.

Answer the key question



Curriculum Intent - Aims

"Mathematics is a creative and highly interconnected 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." The National Curriculum 2014

At Manor Junior School, we strive for our pupils to build lifelong skills in mathematics through the provision of a progressive curriculum rooted in a mastery approach, where they are exposed to rich, contextualised, problems. Within maths lessons, pupils have the opportunity to develop fluency of mathematical skills, apply those skills within contextualised problems and deepen their understanding of the skill through reasoning around problems. We value maths mistakes as an essential part of learning and support children in understanding that mistakes are a sign that they are learning and growing. We aim to ensure that mathematics is a high profile subject, which children view positively and with a 'Can do' attitude. Our curriculum is frequently reviewed to ensure that is it current and effective and teachers are supported and aided in their teaching of mathematics through appropriate high quality CPD ensuring confidence in the skills and knowledge that they are required to teach.

Curriculum Implementation How do we achieve our aims?

Our curriculum is based on a spiral model, where pupils will meet the same topics and concepts several times over the course of each year. This enables children to retrieve knowledge they already have and build upon it throughout the year. We create our own plans using Hampshire (HIAS) maths schemes of learning overviews and unit plans, which include required prior knowledge, misconceptions, key vocabulary, and suggested tasks. The school calculation policy is adhered to across the school for the four operations including a range of mental maths strategies across all year group. In each sequence of lessons, there are opportunities for pupils to develop their conceptual understanding of mathematics through the use of concrete resources such as counters, Numicon or Dienes, pictorial representations and abstract calculations (CPA approach). These build progressively through each strand of the curriculum, deepening pupils' understanding of the maths to enable them to problem solve and reason effectively. Children are exposed to a range of strategies to help them solve calculations, which in turn gives them the opportunity to choose the most efficient calculation strategy to solve a calculation or problem. We provide rich opportunities for our children to use, apply and problem solve using mathematical knowledge and understanding. Each day (usually in early morning work), children will complete tasks to retrieve and embed prior learning involving a mixture of fluency, reasoning and problem solving tasks. The expectation is that the majority of children will move through the learning journeys at broadly the same pace. Teachers plan lessons so the majority of the class can access these including different levels of questioning, different follow-up tasks, or additional questions. However, decisions about when to progress should always be based on the security of a child's understanding and their readiness to progress to the next stage. Children who grasp concepts rapidly are challenged through being offered rich and more sophisticated problems to broaden their mathematical thinking. Other children may need additional support or scaffolding such as pre-teaching of new concepts or vocabulary, visual example or sentence stems.

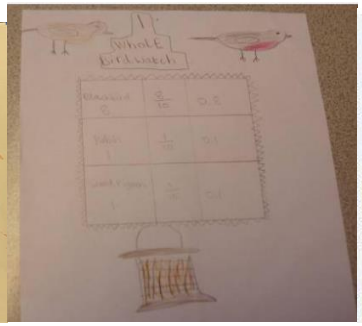
Curriculum Impact How will we know we have achieved our aims?

The impact of our mathematics curriculum is that children understand the relevance and importance of what they are learning in relation to real world concepts. Children know that maths is a vital life skill that they will rely on in many areas of their daily life. As a core subject, maths is assessed regularly to ascertain the children's learning and retention of key concepts. Assessment is based on questioning, verbal discussions and written outcomes. Teachers use the HAM assessment model at the end of each term and phase to complete data tracking sheets. This information is reviewed by senior leaders, the maths leader, year leaders and teaching teams to ensure that all children are achieving well. Teacher assessment is supported by NFER tests at the beginning and end of the year. In addition, all teachers report to parents each term and produce a written report at the end of the year. Discussions in termly pupil progress meetings consider what additional support and/or interventions are needed to ensure that all children continue to make progress and some make accelerated progress. We regular monitor the maths provision across the school and pupil conferencing is undertaken to ascertain and share their views about maths.

Our maths books evidence learning of a high standard of which children clearly take pride; the components of the teaching sequences demonstrate good coverage of fluency, reasoning and problem solving. Our feedback and interventions support children to strive to be the best mathematicians they can be, ensuring a high proportion of children meet or exceed their targets.

Curriculum Links with other subjects and enrichment opportunities

We value the importance of maths across the curriculum. Maths skills are consolidated and enhanced when pupils have opportunities to apply and develop them across the curriculum. Linking maths into other subjects makes it much more interesting and enables children to understand that maths is all around us in our daily life. At Manor Junior School, mathematical knowledge is applied and embedded in all areas of the wider curriculum. Examples include: planning and budgeting a picnic, school bird watch data collection and analyse of results, applying measuring skills during geography fieldwork or science investigations.




English

- Unpicking maths vocabulary
- Reasoning and explanations (editing these to ensure they are precise and that there is an accurate use of vocabulary)
- Maths linked to a book and through stories https://www.mathsthroughstories.org/recommendations.html
- Statistics included in information texts, persuasive writing etc.
- Interpreting and discussing patterns, connections and results
- Making a video to explain a new maths concept

Science

As part of STEM, maths and science are tightly linked together. Almost every scientific investigation is likely to require one or more of the mathematical skills of classifying, counting, measuring, calculating, estimating, and recording in tables or in graphs.

Algebra is useful when using formulas in science. Converting between metric units and between imperial and metric units is also used in some scientific investigations. Data handling is used extensively in science and most charts and graphs that are used in science are used in maths.

Geography

- Grid references and co-ordinates
- Scales on maps
- Time zones
- Temperatures of places around the world including negative numbers
- Interpreting, comparing and representing data – e.g. rainfall, population, heights of mountains, lengths of rivers etc.

PE and Games • Collecting data including averages to analyse performance • Time, distance and speed in races/events • Repeating sequences in dance/gymnastics	**Art** • Ratio and proportion when mixing paint • Geometry (symmetry/ tessellation) used in art, analysing and creating pieces. • Studying the work of famous artists e.g. Mondrian.	**History** • Ordering dates on time lines, comparing dates • Interpreting historical data • Charts and graphs to present information and analyse • Exploring concepts from the past e.g. number systems
Design Technology • Estimation skills • Reading scales and measuring ingredients • Converting measures (imperial and metric) • Simple ratio and proportion in recipes • Measuring accurately to create and make designs	**Modern Foreign Language (French)** • Counting • Telling the time • Direction and position • Shapes	**Computing** • Angles and directions e.g. using Scratch or floor robots • Representing data, formula and calculation in excel/using databases • Problem solving and using logic to solve problems in programming • Algorithms
Music • Times and speed when looking at tempo • Equivalent fractions for musical notation (quavers, semi quavers etc.)	**RE** • Symmetry of religious buildings and patterns	**PSHE** • Numbers that come up in everyday discussions and conversations e.g. 1/10 of the population are left handed
Enrichment Opportunities Outdoor learning opportunities. TTRS maths program to use at home and school to improve fluency of times tables. Times table battles and competition within year groups and across the school. Parental engagement – Hampshire Achieves Multiply Games Night (tbc) Times Tables Workshop.		

Year 3 – Yearly Overview

Hampshire Services
HIAS SCHOOL IMPROVEMENT

HIAS MOODLE+ RESOURCE

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12	Week 13	Week 14
Autumn	3.1 Number and Place Value Addition and Subtraction			3.2 Measurement: Money	3.2 Addition and Subtraction	3.3 Multiplication and Division		3.4 Fractions		3.4 Geometry		3.5 Measurement	3.5 Measurement: Time	
	Measurement: Time : Utilise everyday opportunities to tell the time from an analogue clock. Use the vocabulary of time (am/pm; morning/afternoon; noon/midnight. Know the number of days in each month, year and leap year													
Spring	3.6 Fractions	3.6 Geometry	3.7 Addition and Subtraction			3.8 Measurement: Time	3.9 Multiplication and Division		3.9 Fractions	3.10 Number and Place Value Addition and Subtraction with Measurement		3.10 Statistics		
	Measurement: Time: Utilise everyday opportunities to tell the time, including on a clock face with Roman numerals. Number: Practise counting in multiples of 3, 4 and 50, and in 100s from any number.													
Summer	3.11 Multiplication and Division			3.12 Geometry		3.13 Addition and Subtraction		3.14 Multiplication and Division		3.14 Fractions	3.15 Measurement: Money and Time		3.16 Measurement: length	

Year 4 – Yearly Overview

Hampshire Services
HIAS SCHOOL IMPROVEMENT

HIAS MOODLE+ RESOURCE

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12	Week 13	Week 14
Autumn	4.1 Number and Place Value Addition and Subtraction			4.2 Measurement with Addition and Subtraction		4.3 Multiplication and Division		4.4 Fractions			4.5 Geometry	4.5 Measurement		4.5 Time
	Measurement: Time : Utilise everyday opportunities to tell the time from an analogue clock and a 24-hour clock. Estimate and read time with increasing accuracy to the nearest minute. Convert from hours to minutes, minutes to seconds, years to months, weeks to days.													
Spring	4.6 Factions		4.6 Geometry	4.7 Number and Place Value Addition and Subtraction			4.8 Measurement: Time	4.9 Multiplication and Division		4.9 Fractions	4.10 Place Value Addition and Subtraction with Statistics			
	Measurement: Time: Utilise everyday opportunities to tell the time, including on a clock face with Roman numerals. Convert to 12-hour and 24-hour time. Read Roman numerals to 100 (C). Practise counting in multiples of 25 and 1000 from zero													
Summer	4.11 Multiplication and Division			4.12 Geometry		4.13 Addition and Subtraction and Statistics		4.14 Multiplication and Division		4.14 Fractions	4.15 Measurement: Money and Time		4.16 Measurement: length	

Year 5 – Yearly Overview

Hampshire Services
HIAS SCHOOL IMPROVEMENT

HIAS MOODLE+ RESOURCE

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12	Week 13	Week 14
Autumn	5.1 Number and Place Value Addition and Subtraction with measurement			5.2 Multiplication and Division with measurement			5.3 Fractions	5.4 Fractions	5.4 Time	5.4 Geometry and Measurement		5.5 Number and Place Value and Measurement with the Four Operations		
	Measurement: Utilise everyday opportunities to convert units using place value understanding and knowledge of tables facts													
Spring	5.6 Fractions		5.6 Geometry	5.7 Addition and Subtraction	5.7 Fractions	5.8 Statistics	5.9 Measurement and Geometry		5.9 Fractions	5.10 Addition and Subtraction	5.11 Multiplication and Division			
	Measurement: Utilise everyday opportunities to convert units using place value understanding and knowledge of tables facts. Practise mental strategies using facts, related derived facts and place value knowledge such as adding 99 , adding 0.99, near doubles etc													
Summer	5.12 Multiplication and Division		5.13 Geometry	5.14 Four Operations	5.15 Addition and Subtraction with Statistics		5.16 Fractions		5.16 Geometry	5.17 Multiplication and Division		5.18 Four Operation and Measurement		

Year 6 – Yearly Overview

Hampshire Services
HIAS SCHOOL IMPROVEMENT

HIAS MOODLE+ RESOURCE

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12	Week 13	Week 14
Autumn	6.1 Number and Place Value Addition and Subtraction			6.2 Multiplication and Division			6.3 Fractions	6.4 Percentages	6.4 Time	6.4 Geometry		6.5 Number and Place Value And Measurement with the Four Operations		
	Utilise everyday opportunities to develop fluency with a broad range of arithmetic strategies in the context of the current unit of work. Revise and consolidate key facts for measurement and conversion of units of measure.													
Spring	6.6 Fractions and Ratio		6.6 Geometry and Measurement	6.7 Addition and Subtraction (Fractions) with Algebra			6.8 Statistics	6.9 Measurement	6.9 Algebra	6.10 Four Operations with Statistics		6.11 Geometry	6.11 Fractions	
	Utilise everyday opportunities to develop fluency with a broad range of arithmetic strategies in the context of the current unit of work. Revise and consolidate key facts for measurement and conversion of units of measure.													
Summer	6.12 Multiplication and Division			6.13 Statutory Tests	6.14 Fractions		6.15 Four Operations and Algebra			6.16 Fraction with Geometry. Ratio and Proportion		6.17 Multiplication and Division	6.18 Measurement	