Purpose

Maths is the study of numbers, shape and space, and how they are all related to each other and the real world.

Intent:

At Frimley, we believe that enjoyment is paramount to our aim of developing confident mathematicians. Through a rich and engaging mathematical curriculum, pupils will have opportunities to develop and apply their fluency, reasoning and problem-solving skills to support their attainment so that they are ready for further progress at the next stage of their educational development.

We aim to ensure that mathematics is exciting, engaging, appropriately challenging and provides all learners with the chance to achieve successes in every lesson so to foster a positive attitude and growth-mindset towards the subject. Fluency, reasoning and problem-solving are the focal points of learning; this along with a small-step approach with a focus on mastery ensures that children develop and secure their understanding of mathematical concepts and have the opportunity to demonstrate a deep understanding of the areas taught.

Implementation:

- We use a mastery-based curriculum that is progressive and broken into modules.
- Teachers deploy the Rosenshine principles to support the teaching and learning process: reviews of previous learning, new information is presented in small steps, high-level questioning, carefully considered models, guided practice, checks for pupil understanding, obtainment of a high success rate, scaffolds for difficult tasks, opportunities for independent practice and reviews of learning over extended periods.
- Maths is taught daily and essential knowledge and skills are revisited with increasing complexity, allowing children to revise and build on their previous learning.
- Through careful planning, use of a small-step approach and pre-teaching of processes and mathematical vocabulary, where appropriate, all learners are able to access each lesson.
- Assessment of learning, both during and after lessons, ensures that learners can be supported fluidly or extended appropriately thus providing all with the opportunity to deepen their learning in every lesson.
- In lessons, teachers provide pupils with appropriate models and scaffolds, in line with our calculation policy whilst resources are utilised, where appropriate, so that pupils can secure concrete and pictorial understanding of concepts or processes before applying their understanding to a range of abstract representations.
- When planning lessons, teachers work collaboratively to ensure the needs of all learners across the year group are met: pre-teaching, representations during teaching inputs, assessment for learning tasks, accessible starting points, lesson progressions and appropriate challenge are carefully considered.
- Pupils are provided with retrieval challenges in all lessons to support retention and long-term memory of previously taught areas.
- Wherever possible, pupils are given opportunities to practise their fluency, reasoning and problem-solving skills in each lesson.
- Through full coverage of the National Curriculum, links to prior learning and real-life situations are explicitly made so that pupils are building on previous experiences whist also recognising the links that can be made across the curriculum and beyond – children encounter meaningful cross-curricular links in subjects such as science, geography, history and computing.
- In lessons, resources from White Rose Hub are used to support the small-step approach; a range of other resources such as NCETMs mastery materials, Nrich and online platforms are also used to ensure that teaching is active, relevant and engaging.
- NTS assessments are carried out termly in years 3, 4 and 5. For year 6, SATs papers from previous years are used for summative assessment.
- Assessment outcomes are monitored and analysed to identify wider school trends. Subsequent actions are taken in response to all formats of monitoring to continually improve maths provision.
- Times tables are taught explicitly every day using supporting resources from Number Sense Maths in addition to the curriculum to support recall and fluency of multiplication and division facts.
- Progress in times tables lessons is continuously monitored by class teachers with interventions provided at the earliest possible opportunity for those making less than expected progress.

- TTrockstars is one of the online resources used to help inspire pupils in this area of learning. Weekly TTrockstars tasks are set to provide pupils with the chance to consolidate the learning they have done in school.
- Throughout the academic year, pupils will have opportunities to participate in maths competitions and the maths leader will continue to explore and utilise opportunities to raise the profile of maths across the school.
- Links to careers in maths are made to show how children's learning links to the wider world of work – children also participate in various STEM work during their time at the school.
- As well as learning walks to observe teaching and learning, the Book Study approach is used to monitor the effectiveness of the maths curriculum, teaching and learning, to identify strengths and areas for development in provision and to garner pupil voice.

Impact:

Children will:

- Enjoy maths and approach the subject with a positive attitude and growth-mindset.
- Be able to access learning and will encounter appropriate challenge in all lessons.
- Make positive progress each year with most meeting age related expectations or higher, ensuring they are ready to progress to the next stage of their educational development.
- Have a deep understanding of the methodology in maths and be able to explain their understanding. This will develop their reasoning and problem-solving skills.
- Possess a wide range of mental strategies and will understand the importance of times tables with the majority being able to recall all times tables by the end of Year 4.
- Be able to independently apply their mental strategies and mathematical fluency to support them to solve increasingly challenging problems.
- Make mathematical links to other areas of the curriculum and wider life.
- Be supported to close gaps and make accelerated progress if they are working below age-related expectations.
- Understand how their learning in maths links to the wider world of work.
- Meet the end of KS2 expectations outlined in the National curriculum for maths.

	Autumn	Spring	Summer
Year 3	**Number – Place Value** This half term, children will build on their place value knowledge to recognise the value of each digit in a three-digit number and to compare and order numbers up to 1,000. They will use different representations to identify, represent and estimate numbers and will read and write numbers up to 1,000 in numerals and words. **Number - Addition and Subtraction** They will also add and subtract three-digit numbers using concrete resources, mental strategies and formal methods.	**Number - Multiplication and Division** This half term, children will further develop their multiplication and division knowledge to solve related calculations with multiples of 10. They will multiply and divide 2-digit numbers by 1 digit, firstly without exchanges and then with, using concrete resources to develop conceptual understanding as well as place value charts and partitioning. **Measurement – Length and Perimeter** They will also work on length and perimeter and will use metric measures when exploring length and equivalents. They will learn what perimeter is and will measure perimeter and calculate it when given values.	**Number - Fractions** Building on their knowledge of fractions, children will add and subtract fractions with the same denominator, will learn how to partition the whole and will explore fractions of amounts using different representations. **Measurement - Money** They will also work on money focusing on pounds and pence and converting between the two. They will add and subtract amounts of money and solve problems with more than one step to find change.
	Number - Multiplication and Division Children will develop their multiplication and division knowledge, revisiting multiples of 2, 5 and 10 and learning to recall facts for the 3, 4 and 8 multiplication tables. They will explore arrays, sharing and grouping with concrete resources and use x, ÷ and – to write statements developing mental strategies before progressing to formal written methods. As well as developing fluency, children will apply knowledge to reason and solve problems.	**Number - Fractions** Fractions will be an area of focus this half term. Children will develop understanding of the denominator, the numerator and the whole in unit and non-unit fractions and will compare and order them. They will explore fractions on a number line and equivalent fractions using different representations. **Measurement – Mass and Capacity** Children will also work on mass and capacity, measuring in grams and kilograms to compare masses and millilitres and litres for capacity They will use their knowledge to reason and solve problems involving both.	**Measurement - Time** Children will learn about time, using small steps to progress to telling the time to the minute. They will use am and pm and will also explore units of time for years, months, days, hours, minutes and seconds. **Geometry - Shape** Shape will be another area of focus: children will compare angles, learn the difference between horizontal and vertical and parallel and perpendicular and will build on their knowledge of 2-D and 3-D shapes. **Statistics** Lastly, they will work on statistics. They will interpret and use pictograms and learn how to interpret and draw bar charts.

Year 4	**Number – Place Value** Beginning with place value, children will revisit number to 1,000 before representing, partitioning, comparing and ordering numbers up to 10,000. They will learn to use Roman numerals up to 100 and will round numbers to the nearest 10, 100 and 1,000. **Number – Addition and Subtraction** In addition and subtraction, they will add and subtract up to two 4-digit numbers without and with exchanges using concrete resources to support conceptual understanding before applying their knowledge to abstract methods.	**Number – Multiplication and Division** Children will explore and use factor pairs and will learn to use place value and efficient strategies for multiplying and dividing by 10 and 100. They will also develop further informal methods, building on their conceptual understanding, for multiplying and dividing up to 3-digit numbers by 1 digit. **Measurement – Lenth and Perimeter** In length and perimeter, children will use kilometres and metres and will find perimeter of rectilinear shapes. They will also use their knowledge to find missing lengths of rectilinear shapes and the perimeter of polygons.	**Number – Decimals** Building on their learning on decimals, children will make wholes with tenths and hundredths. They will partition decimals and compare and order them. They will round decimals to the nearest whole number and will learn how to represent halves and quarters as decimals. **Measurement – Money** Children will write money amount using decimals and will develop their ability to convert between pounds and pence. They will compare amounts of money and will complete calculations and problems with multiple steps. **Measurement – Time** Building on their learning in year 3, children will learn to convert between analogue and digital times and converting to and from the 24 hour clock.
	Number – Multiplication and Division Children will develop their multiplication and division knowledge, revisiting multiples of 3 before moving on to multiply and divide by 6 and 9. They will then learn times tables and division facts for the 7, 11 and 12 multiplication tables and the rules for multiplying by 1 and 0. **Measurement - Area** Children will also explore area: developing understanding of what area is, counting squares to find area and making and comparing shapes with different areas.	**Number – Fractions** In fractions, children will count beyond 1 and partition, compare and order mixed numbers. They will develop their understanding of improper fractions and will convert between mixed numbers and improper fractions. They will explore equivalent fraction families using times tables knowledge and will add and subtract fractions with the same denominator including mixed numbers. **Number – Decimals** Children will work on decimals, developing their understanding of tenths and hundredths as fractions, decimals and on place value charts. They will apply this knowledge to divide 1- or 2-digit numbers by 10 and 100.	**Statistics** Children will work on interpreting data in charts and solving related problems using comparison, sum and difference. They will also learn to interpret and draw line graphs. **Geometry – Shape** In geometry, children will identify, compare and order angles and will develop their understanding of the properties of triangles, quadrilaterals and polygons. They will also explore lines of symmetry. **Geometry – Position and Direction** Children will learn to describe position using coordinates and to plot coordinates. They will draw 2-D shapes on a grid and will learn how to translate and describe translations on a grid.

Year 5	**Number – Place Value** Beginning with place value, children will learn to recognise Roman numerals to 1,000. They will read and write, partition, compare and order numbers up to 1,000,000 and round numbers within 1,000,000 to the nearest 10, 100 and 1,000. **Number – Addition and Subtraction** In addition and subtraction, they will continue to develop their mental strategies. They will add and subtract numbers with more than four digits, use inverse operations and complete multi-step problems with addition and subtraction.	**Number - Multiplication and Division** Children will use pictorial representations before moving on to multiply up to 4-digit numbers by 1 digit. They will explore the area model to multiply a 2-digit number by a 2-digit number before progressing to application of the formal method to multiply up to 4-digit numbers by a 2-digit number. They will also be introduced to the short division method to divide up to 4-digit numbers by 1 digit including calculations with remainders. **Number – Fractions** Children will explore what happens when multiplying fractions and mixed numbers by an integer, will calculate fractions of quantities and will further develop their understanding of finding fractions of amounts.	**Geometry – Shape** Developing on their understanding of angles, children will understand and use degrees. They will classify and estimate angles as well as measure angles up to 180 degrees. They will work on drawing lines and angles accurately and will calculate angles around a point and on a straight line. They will also explore angles and lengths in regular and irregular polygons and will recap names of 3-D shapes before moving on to learning about their properties. **Geometry – Position and Direction** Children will recap learning to read and plot coordinates and will move on to using knowledge to solve problems with coordinates. They will build on their knowledge of translation and symmetry and will be introduced to what reflection is and will practise reflecting shapes on a coordinate grid.
	Number – Multiplication and Division The children will develop their learning of multiples and factors to find common multiples and factor. They will learn about prime, square and cube numbers, will revisit multiplying and dividing by 10 and 100 and will introduce doing so by 1,000. **Number - Fractions** In their fractions learning, children will find equivalent fractions for unit and non-unit fractions using times tables knowledge and will compare and order fractions less than and greater than 1. They will be introduced to adding and subtracting fractions with different denominators and will also add and subtract mixed numbers.	**Number – Decimals and Percentages** Children will revisit decimals up to 2 decimals places, finding equivalent fractions and decimals for tenths and hundredths and will be introduced to thousandths. They will explore thousandths as fractions, decimals and on place value charts to secure their understanding and will apply knowledge to order and compare decimals and to round to the nearest whole and to 1 decimal place. They will also be introduced to percentages and that percent means out of 100 and explore percentages as fractions and decimals. **Measurement – Perimeter and Area** Children will revisit perimeter of rectilinear shapes and polygons and will learn to find the area of rectangles and compound shapes using multiplication. **Statistics** Children will revisit and build on their learning on line graphs and interpreting tables and two-way tables and they will also lean to read and interpret timetables.	**Number – Decimals** Furthering their decimals knowledge, children will add and subtract decimals within and across 1 for numbers with the same and different numbers of decimal places using known facts and formal methods. They will work on developing efficient strategies and will also multiply and divide decimals by 10, 100 and 1,000. **Number – Negative Numbers** Children will be introduced to negative numbers, learning to count through zero in 1s and in multiples. They will compare and order negative numbers and will find the difference between positive and negative numbers. **Measurement – Converting Units** Children will build on their knowledge of converting metric measures and will apply knowledge to reason and problem solve. They will also convert between metric and imperial measures, units of time and will calculate with timetables. **Measurement – Capacity** In this unit, children will be introduced to cubic centimetres. They will compare and estimate volume before moving on to explore capacity of different objects.

Year 6	**Number – Place Value** Children will revisit numbers up to 1,000,000 before moving on to recognise place value and comparing and ordering numbers up to 10,000,000. They will build on their rounding knowledge to round numbers to the nearest 10,000, 100,000 and 1,000,000 and will secure their understanding of negative numbers. **Number – Addition, Subtraction, Multiplication and Division** Children will revisit and build on learning for common factors and multiples as well as prime, square and cube numbers. They will consolidate multiplying 4-digit numbers by 2-digit numbers and will be introduced to long division. They will also explore the order of operations, reason and problem solve using knowledge of all 4 operations and continue to develop efficient strategies and methods using known facts.	**Number – Fractions, Decimals and Percentages** Children will explore decimal and fraction equivalents and fractions as division. They will build on their prior learning on percentages, to find equivalences and to compare and order fractions, decimals and percentages. They will also learn how to find percentages and amounts for problems involving one-step and for problems involving multiple steps. **Measurement – Area, Perimeter and Volume** Building on their knowledge of finding the area of rectilinear shapes and polygons, children will learn how to find the area of different triangles and the area of a parallelogram. They will also explore the volume of cuboids and will use multiplication and the formula for calculating volume.	**Statistics** Children will revisit learning on line graphs before building on prior knowledge of bar charts to explore dual bar charts. They will learn how to read and interpret pie charts, applying knowledge for fractions and percentages. They will also learn how to calculate and interpret the mean as an average. **Measurement – Converting Units** Children will recap learning of converting metric measures and will also use conversions between measurements for capacity. They will solve measurement problems in context and learn how to convert between miles and kilometres.
	Number -Fractions Children will build on their knowledge of equivalent fractions to recognize and find their simplest form. They will consolidate their learning on adding and subtracting fractions with different numbers and methods for adding and subtracting mixed numbers. They will revisit multiplying fractions by integers and explore what happens when multiplying fractions by fractions and dividing fractions by integers. They will also revisit fractions of amounts and apply this to increasingly higher quantities. **Number – Decimals** Revisiting learning from year 5, children will add and subtract decimals and multiply and divide by 10, 100 and 1,000. They will then move on to using formal methods to multiply and divide decimals by integers. **Geometry – Position and Direction** Children will revisit coordinates using one quadrant before being introduced to reading and plotting point in four quadrants. They will then apply their knowledge of translations and reflections using the four quadrants.	**Geometry – Shape** Developing their knowledge and understanding of angles, children will explore vertically opposite angles, angles in different types of triangles and angles in quadrilaterals and polygons as well as learning about the radius, diameter and circumference of a circle. They will also explore how a 3-D shape can be made using knowledge of 2-D shapes that make up its faces. **Ratio** In this introduction to ratio, children will learn how to use ratio language and the ratio symbol. They will explore similarities and difference between ratio and fractions, learn about enlargements using scale factors and they will solve problems involving ratio and proportion. **Algebra** Children will be introduced to algebra and learn how to use 1- and 2-step function machines before moving on to forming expressions and using substitution. They will be introduced to formulae using symbols and will apply their understanding to solve 1- and 2-step equations and to find pairs of values.	**Consolidation** Children will revisit areas from throughout the year and the key stage to consolidate and secure knowledge and understanding. They will participate in various investigations that require knowledge and understanding of different mathematical areas as well as exploring cross-curricular links through a range of activities.