

Maths Progression Document

Intent: Our scheme of work follows the White Rose plans, single age and mixed age planning to ensure all concepts are taught within our classes. We use a teaching for mastery approach, which assumes everyone can learn and enjoy mathematics. Curriculum design ensures a coherent and detailed sequence of essential content to support sustained progression over time.

We want pupils to become fluent in the fundamentals of mathematics, to be able to reason and to solve problems. Lesson design links to prior learning to ensure all can access the new learning and identifies carefully sequenced steps in progression to build secure understanding. Pupils are taught through whole-class interactive teaching, enabling all to master the concepts necessary for the next part of the curriculum sequence. Use of precise mathematical language enables all pupils to communicate their reasoning and thinking effectively. Significant time is spent developing deep understanding of the key ideas that are needed to underpin future learning. Key number facts are learnt to automaticity, and other key mathematical facts are practised regularly, to avoid cognitive overload in working memory and to enable pupils to focus on the learning of new concepts.

KS1 children should:

- Develop confidence and mental fluency with whole numbers, counting and place value. This should involve working with numerals, words and the 4 operations, including with practical resources [for example, concrete objects and measuring tools].
- 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.
- Read and spell mathematical vocabulary, at a level consistent with their increasing word reading and spelling knowledge at key stage 1.

Year 1	Year 2
<u>Number and place value</u> • Numbers up to 10 • Numbers up to 20 • Numbers up to 40 or 50 • Numbers up to 100 <u>Addition and subtraction</u> • Addition and subtraction within 10 • Addition and subtraction within 20 • Addition and subtraction within 40 or 50 • Addition and subtraction within 100 <u>Multiplication and division</u> • Introduction to multiplication and division <u>Geometry</u> • Recognising 2D and 3D shapes	<u>Number and place value</u> • Two-digit numbers <u>Addition and subtraction</u> • Two-digit addition and subtraction <u>Multiplication and division</u> • 2s, 3s, 5s and 10s <u>Geometry</u> • Shape & Patterns • Rotation <u>Time</u> • Telling the time <u>Length, weight, area and volume</u> • Units of length • Exploring weight (or mass)

• Turns <u>Time</u> • Introduction to time <u>Length, weight, area and volume</u> • Introduction to length • Introduction to weight and mass • Introduction to capacity and volume <u>Money</u> • Introduction to coins and notes <u>Fractions</u> • Introduction to fractions • Introduction to halves and quarters	• Capacity, volume and temperature <u>Money</u> • Understanding pounds and pence <u>Fractions</u> • Introduction to comparing, ordering and equivalent fractions <u>Statistics</u> • Introduction to graphs
Lower KS2 children should: • Become increasingly fluent with whole numbers and the 4 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. • 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. • Read and spell mathematical vocabulary correctly and confidently, using their growing word-reading knowledge and their knowledge of spelling. Upper KS2 children should: • 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. • 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 4 operations, including long multiplication and division, and in working with fractions, decimals and percentages. • Read, spell and pronounce mathematical vocabulary correctly.	
Year 3	Year 4
<u>Number and place value</u>	<u>Number and place value</u>

• Three-digit numbers <u>Addition and subtraction</u> • Three-digit addition & subtraction <u>Multiplication and division</u> • 3s, 4s, 8s, 50s and 100s • Exploring multiplication and division <u>Geometry</u> • Angles • Making shapes <u>Length, weight, area and volume</u> • Length & perimeter • Length, weight, capacity and volume <u>Time</u> • Analogue and digital time <u>Money</u> • Add & subtract money <u>Fractions</u> • Introduction to finding fractions of amounts • Introduction to adding and subtracting fractions <u>Statistics</u> • Using graphs <u>Roman Numerals</u> • Roman Numeral on the clock	• Four-digit numbers • Numbers below 0 <u>Addition and subtraction</u> • Four-digit addition and subtraction <u>Multiplication and division</u> • 6s, 7s, 9s, 25s and 1000s • Short multiplication <u>Geometry</u> • Comparing angles • Classifying quadrilaterals and triangles • Symmetry • Coordinates and translations <u>Length, weight, area, capacity and volume</u> • Area by counting shapes • Converting between different units of measure • Perimeter of simple shapes <u>Time</u> • Converting between units of time <u>Money</u> • Solving problems involving money <u>Fractions</u> • Common equivalent fractions • Fractions of amounts • Add and subtract fractions with the same denominator <u>Statistics</u> • Bar charts, pictograms, time graphs and tables <u>Roman Numerals</u> • Roman Numerals to 100 (C) <u>Factors, multiples and primes</u> • Factor pairs <u>Decimals</u> • Introduction to decimals
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Year 5	Year 6
<u>Number and place value</u> - At least a million - Introduction to negative numbers <u>Addition and subtraction</u> - Addition and subtraction of numbers with more than 4 digits - Combining addition and subtraction, multiplication and division <u>Multiplication and division</u> 10s, 100s and 1000s - Multiplication of two-digit numbers and short division <u>Geometry</u> - Drawing, measuring, comparing and finding angles - Exploring 2D representations of 3D shapes - Reflection and translation <u>Length, weight, area and volume</u> - Converting metric and simple imperial units - Perimeter and area - Exploring capacity and volume <u>Time</u> - Further converting between units of time <u>Fractions</u> - Compare, order and simplify fractions - Compare, order and find equivalent fractions - Introduction to adding and subtracting fractions with different denominators - Add and subtract fractions with the same denominator <u>Statistics</u> - Line graphs and tables <u>Roman Numerals</u> - Roman numerals to 1000 (M) <u>Decimals</u>	<u>Number and place value</u> - Positive integers - Negative numbers <u>Addition and subtraction</u> - Addition and subtraction of numbers of any size - Calculations with four operations <u>Multiplication and division</u> - Long multiplication and short division <u>Geometry</u> - Circles - Building and drawing 2D and 3D shapes and nets - Classifying shapes - Missing angles and lengths - Coordinates, translation and reflection <u>Length, weight, area and volume</u> - Area and volume <u>Time</u> - Problems involving converting between units of time <u>Fractions</u> - Adding and subtracting fractions with different denominators - Multiply and divide fractions <u>Decimals and percentages</u> - Calculating with decimals - Calculating with percentages <u>Statistics</u> - Pie charts, line graphs and the mean average <u>Factors, multiples and primes</u> - Common factors and multiples <u>Algebra</u> - Understanding algebra <u>Ratio and proportion</u>

• Four operations with decimals <u>Percentages</u> • Introduction to percentages <u>Ratio and proportion</u> • Rates and scaling by fractions <u>Factors, multiples and primes</u> • Factors, multiples and prime numbers	• Solving problems involving ration and proportion
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