



The Mathematics Curriculum at Sheepscombe Primary School

The Sheepscombe School Community believes that:

Mathematics provides a toolbox to enable our children to explore the world, a way to uncover and enjoy revealing its mechanics and patterns. Technical competence in Mathematics is essential as a bridge to wider scientific study, and a grounding in logic and reasoning will stand our children in good stead in all academic fields. But our Mathematics curriculum is also designed to promote curiosity and creativity, alongside accuracy and methodical process. Wherever appropriate, we will use the natural world for inspiration and resources, and we will celebrate the linkages between Mathematics and art. We will use information technology sparingly, but we will explore the application of logic to the field of coding and robotics. Wherever possible, we will ensure that there is clear relation between the study of Mathematics and its real-life application. Children will learn about and celebrate human achievements that have been made possible through the application of Mathematics. Alongside our school curriculum, we will make the most of external enrichment opportunities that foster excitement about Mathematics, including the Cheltenham Science Festival, Glow Mathematics events, 24 Challenges, Primary Mathematics Challenge and any others that present themselves.

As a result, by the time our children leave in Year 6, they are fluent, confident mathematicians, with a strong grasp of mathematical vocabulary, and the logic and reasoning skills that will serve them through their future education; they are individuals who have been encouraged to explore the varied and diverse world of Mathematics, and recognise both the learning and the pleasure that it offers.

National Curriculum – Aims

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 nonroutine problems with increasing sophistication, including breaking down problems into a series of simpler steps and persevering in seeking solutions. Mathematics is an interconnected subject in which pupils need to be able to move fluently between representations of mathematical ideas. The programmes of study are, by necessity, organised into apparently distinct domains, but pupils should make rich connections across mathematical ideas to develop fluency, mathematical reasoning and competence in solving increasingly sophisticated problems. They should also apply their mathematical knowledge to science and other subjects. The expectation is that the majority of pupils will move through the programmes of study at broadly the same pace. However, decisions about when to progress should always be based on the security of pupils’ understanding and their readiness to progress to the next stage. Pupils who grasp concepts rapidly should be challenged through being offered rich and sophisticated problems before any acceleration through new content. Those who are not sufficiently fluent with earlier material should consolidate their understanding, including through additional practice, before moving on

National Curriculum – Purpose of Study

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.

Early Years Foundation Stage

The EYFS requires children to be supported in developing their understanding of problem solving, reasoning and numeracy in a broad range of contexts in which they can explore, enjoy, learn, practise and talk about their developing understanding. We provide children with opportunities to practise these skills and gain confidence. Young children learn best through play. For their learning to be effective, they need sensitive and informed support from adults. All children can be successful with mathematics, provided they have opportunities to explore ideas in ways that make personal sense to them and opportunities to develop concepts and understanding. Children need to know that practitioners are interested in their thinking and respect their ideas. Developing a strong grounding in number is essential so that all children develop the necessary building blocks to excel mathematically. Children need lots of opportunities to develop number sense and deepen their conceptual understanding .By providing frequent and varied opportunities to build and apply this understanding practically - children will develop a secure base of knowledge and vocabulary from which mastery of mathematics is built.In addition, it is important that the curriculum includes rich opportunities for children to develop their spatial reasoning skills across all areas of mathematics including shape, space and measures. It is important that children develop positive attitudes and interests in mathematics, look for patterns and relationships, spot connections, ‘have a go’, talk to adults and peers about what they notice and not be afraid to make mistakes

Merlin Class							
Kestrel Class				Eagle Class			
Little Lambs	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Number Develop fast recognition of up to 3 objects, without having to count them individually Recite numbers to 5 Begin to recite numbers past 5	Number Recite numbers to 10 Recite numbers beyond 10 Read numbers to 5 automatically Read numbers to 10 on most occasions Write numbers to 5	Number Count numbers to 10 at speed Read numbers to 10 rapidly Write numbers to 10 accurately Identify numbers to 10 rapidly Represent numbers to 10 Composition of numbers to 10	Number Read numbers to 100 Write numbers to 100 Represent numbers to 100 Place Value Partition numbers to 100 compare numbers to 100	Number Read numbers to 100 Write numbers to 100 Order and compare numbers to 100 Calculate addition mentally using known facts and partitioning strategy Calculate subtraction mentally using known facts and partitioning strategy	Number Read 4-digit numbers. Write 4-digit numbers. Represent 4-digit numbers. Place Value Order and compare 4-digit numbers. Find 10, 100 or 1000 more	Number Read 5 and 6- digit numbers Write 5 and 6- digit numbers Represent 5 and 6- digit numbers Compare and order 5- and 6- digit numbers Round larger numbers including when in context	Number represent numbers up to ten million read numbers up to ten million write numbers up to ten million Place Value Order and compare numbers up to ten million

Count objects, actions and sounds to 5 Say one number for each item in order: 1,2,3,4,5. Know that the last number reached when counting a small set of objects tells you how many there are in total Show ‘finger numbers’ up to 5 Show the right number of objects to match the numeral, up to 5. Compare quantities using language: ‘more than’, ‘fewer than’. Sing some number songs Shape Build structures using 3D shapes Begin to make pictures from 2D shapes Select shapes appropriately: flat surfaces for building, a triangular prism for a roof, etc. Combine shapes to make new ones – an arch, a bigger triangle, etc. Pattern Talk about and identify the patterns around them. For example: stripes on clothes Use informal language like ‘pointy’, ‘spotty’, ‘blobs’, etc Create a simple repeating pattern Notice and correct an error in a simple repeating pattern Sequencing Begin to describe a sequence of events, real or fictional, using words such as ‘first’, ‘then...’	Begin to write numbers beyond 5 Subitise (recognise quantities without counting) up to 5 Automatically recall number bonds up to 5 using addition Automatically recall number bonds up to 5 using subtraction Add one more in a practical context Take one away in a practical context Know some number bonds to 10 Know some double facts to double 5 Experiment with their own symbols and marks as well as numerals. Solve real world mathematical problems with numbers up to 5 Show ‘finger numbers’ to 10 Numerical patterns Verbally count beyond 20 Recognise the pattern of the counting system Compare quantities up to 10 in different contexts Use vocabulary: ‘more than’, ‘less than’, ‘fewer’, ‘the same as’, ‘equal to’. Recognise when one quantity is greater than another Recognise when one quantity is less than the other Recognise when on quantity is the same as another Explore and represent patterns within numbers up to 10 Begin to recognise odd and even numbers Demonstrate that quantities can be shared Demonstrate that quantities can be shared equally Demonstrate that quantities can be paired Shape Talk about and explore 2D shapes Talk about and explore 3D shapes Select, rotate and manipulate shapes to develop spatial reasoning skills Compose and decompose shapes so that children recognise a shape can have other shapes within it Use informal and mathematical language: ‘sides’, ‘corners’; ‘straight’, ‘flat’, ‘round’.	One more and one less within 10 Count numbers to 20 Read numbers to 20 Write numbers to 20 Identify numbers to 20 Represent numbers to 20 Recite numbers to 100 counting in 1’s Represent and explain 10 ones is equal to 1 ten Odd and even numbers Find one more and one less and use comparative language. Place Value Count and read numbers up to 50 Represent and recognise the place value of 2-digit numbers. Sequence and compare the place value of 2-digit numbers. Count in 2s Count in 5s Count in 10s Describe and complete number patterns to 50 Read numbers to 100 Write numbers to 100 Represent numbers to 100 Compare and order numbers to 100 One more / fewer of numbers to 100 ten more / fewer of numbers to 100 Identify number patterns to 100 Addition and Subtraction Aggregation and partitioning structure to add and subtract within 10 Augmentation and reduction structure to add and subtract within 10 Represent and use number bonds to 10 Represent and use number number facts for 5 Represent and use number number facts for 6 Represent and use number number facts for 7 Represent and use number number facts for 8 Represent and use number number facts for 9 Commutativity - Addition strategies Commutativity - subtraction strategies Doubles to 10 Half even numbers to 10 Addition within 20 Subtraction within 20 Represent and explain addition strategies within 20(not bridging ten)	order numbers to 100 Explore patterns including odds and evens, tens and ones Recognise the place value of each digit in a 3-digit number Show the value of a 3-digit number in more than one way Compare numbers using the <, > and = signs Read scales accurately within 1000 units Addition and Subtraction Apply number bonds to addition Apply number bonds to subtraction Represent and explain addition of 2-digit numbers and tens Represent and explain subtraction of 2-digit numbers and tens Represent and explain addition of 2-digit numbers and ones Represent and explain subtraction of 2-digit numbers and ones Represent and explain addition of two 2- digit numbers (no regrouping) Represent and explain subtraction of two 2- digit numbers (no regrouping) Add three 1-digit numbers Explore, develop and represent additive structures through word problems Combination and partitioning in word problems Augmentation and reduction in word problems Comparative addition in word problems Subtraction and difference in word problems Represent and explain addition calculations involving regrouping, ‘Make Ten’ and partitioning of 2 digit num Represent and explain subtraction calculations involving regrouping, ‘Make Ten’ and partitioning of 2 dig num Apply addition strategies to solve equations Apply subtraction strategies to solve equations Explore and represent subtraction as finding the difference. Multiplication and Division Introduce the multiplication and division symbol and explore representations Explore and recall the 2 times tables Explore and recall the 5 times tables Explore and recall the 10-times tables Understand commutativity Explore the 3 times table skip counting pattern	Derive new facts from a known fact Place Value Count and read 3-digit numbers Write 3-digit numbers Represent 3-digit numbers Partition 3-digit numbers Order and compare 3-digit numbers Find 10 more or less Find 100 more or less Identify the multiples of 10 before, after and nearest to a 3-digit number Identify the multiples of 100 before, after and nearest to a 3-digit number Addition and Subtraction Use known facts and mental strategies to add Use known facts and mental strategies to subtract Add by representing and explaining formal written methods Subtract by representing and explaining formal written methods Add by column method Subtract by column method Explore and apply a range of calculation strategies for addition Explore and apply a range of calculation strategies for subtraction Estimate answers to calculations Solve problems involving addition and subtraction Multiplication and Division Recall the multiplication facts for 2 x table Recall the multiplication facts for 3 x table Recall the multiplication facts for 4 x table Recall the multiplication facts for 5 x table Recall the multiplication facts for 10 x table Derive division facts for 2 x table Derive division facts for 3 x table Derive division facts for 4 x table Derive division facts for 5 x table Derive division facts for 10 x table Multiplicative structures: equal groups, repeated addition and multiplication expressions Division structures: grouping and sharing Relationships: commutativity Relationships: inverse Multiply and divide by 10 Multiply and divide by 100 Recall and represent multiplication and division facts for 6- and 8-times table Multiply a 2-digit number by 2 using partitioning Multiply a 2-digit number by 3 using partitioning Multiply a 2-digit number by 4 using partitioning Multiply a 2-digit number by 5 using partitioning	Find 10, 100 or 1000 less Round numbers to the nearest 10 Round numbers to the nearest 100 Round numbers to the nearest 1000 Recognise, represent and write decimals equivalents for tenths Recognise, represent and write decimals equivalents for hundredths Compare and order decimals with one decimal place Compare and order decimals with two decimal places Calculate with decimals by applying known facts Round decimals with one decimal point to the nearest whole number Explore number sequences and patterns involving the place value of other number systems Explore number sequences and patterns including Roman numerals Explore number sequences and patterns including negative numbers Addition and Subtraction Derive facts from known facts Represent and apply formal column method including regrouping. Explore appropriate strategies to add Explore appropriate strategies to subtract Multiplication and Division Identify and explore patterns in multiplication tables Recall and derive 7 times tables Recall and derive 9 times tables Recall and derive 11 times tables Recall and derive 12 times tables Derive multiplication and division facts Multiply by 10 Multiply by 100 Divide by 10 Divide 100 Explore the properties of multiplication Develop mental multiplication strategies Develop mental division strategies Short multiplication Short division Multiply and divide by 10 and 100 including decimals Shape and patterns Explore the perimeter of rectangles Find the perimeter of composite rectilinear shapes Calculate area Classify angles Compare angles Order angles Compare and classify 2-D shapes including quadrilaterals and triangles Identify lines of symmetry Complete symmetrical figures	Read Roman numerals Place Value Find 10,100,1000 more Find 10,000 & 100,000 more Find 10,100,1000 less Find 10,000 & 100,000 less Read, represent, order and compare numbers with up to three decimal places Round decimals with 2dp to the nearest whole number Represent decimal numbers Addition and Subtraction Use known addition facts Use known subtraction facts Represent and explain written methods to add Represent and explain written methods to subtract Use and explain addition and subtraction strategies Derive addition decimal number facts (0.4 + 0.3 = 0.7) Derive subtraction decimal number facts (0.7 – 0.4 = 0.3) Use a range of strategies to add decimal numbers including column method Use a range of strategies to subtract decimal numbers including column method Solve decimal problems involving adding and subtracting Multiplication and Division Multiply by 10,100,1000 Divide by 10,100,1000 Multiply and divide by 10, 100 & 1000 including decimals Explore mental strategies and derive known facts for multiplication Explore mental strategies and derive known facts for division Use and explain multiplication written methods Use and explain division methods written (Including with remainders) Explore and understand multiples Explore and understand factors Explore and understand square numbers Explore and understand prime numbers Derive multiplication facts involving decimals (3 x 0.2= 0.6) Solve problems involving multiplying decimals Explore remainders after division - investigative Shape and patterns Find the perimeter of composite rectilinear shapes (applying mental calculation strategies) Calculate area of composite and rectilinear shapes Calculate area of non-rectilinear shapes	round numbers, make estimates and use this to solve problems in context Addition and Subtraction solve multi-step problems involving addition and subtraction Multiplication and division identify and use properties of number, focusing on primes multiply larger integers using a range of strategies multiply decimal numbers using a range of strategies divide integers by 1-digit numbers representing remainders appropriately divide integers by 2-digit numbers representing remainders appropriately illustrate and explain formal multiplication strategies illustrate and explain formal division strategies Shape and patterns calculate the area of parallelograms and triangles calculate the volume of cuboids estimate the volume of cuboids compare the volume of cuboids compare and classify a range of geometric shapes use angle facts to find unknown angles. recognise and construct 3-D shapes name and illustrate parts of a circle Measures use, read, write and convert between standard units of measures; length – using decimals use, read, write and convert between standard units of measures; mass – using decimals use, read, write and convert between standard units of measures; volume – using decimals use, read, write and convert between standard units of measures; imperial units – using decimals Time use, read, write and convert between standard units of measures; time – using decimals Money use, read, write and convert between standard units of measures; money – using decimals Fractions Deepen understanding of equivalence Order and compare fractions, including those greater than one Simplify fractions, including those greater than one recall equivalence between common fractions and decimals find decimal quotients using short division
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	Position Understand position through words alone – for example, “The bag is under the table,” with no pointing. Describe a familiar route Discuss routes and locations, using words like ‘in front of’ and ‘behind’ Extend and create ABAB patterns – stick, leaf, stick, leaf Measure Make comparisons between objects relating to size Make comparisons between objects relating to length Make comparisons between objects relating to weight Make comparisons between objects relating to capacity Know that things happen at different times of day Know that money pays for things Begin to know the value of some coins Data Collect data on which people like which things by counting how many With help collect data on which people like which things With help present data on which people like which things	Represent and explain subtraction strategies within 20(not bridging ten) Use known facts and strategies to 10 to add Use known facts and strategies to 10 to subtract Doubles to 10 Half even numbers to 20 Model, explain and represent addition and subtraction strategies including ‘make ten’ within 20 Understand the = sign Explore comparison and difference using more, fewer and difference language Illustrate, explain and link addition and subtraction with equations Investigate number bonds within 20 Represent and explore addition involving 2-digit numbers (not involving regrouping) Represent and explore subtraction involving 2-digit numbers (not involving regrouping) Represent and apply number facts/strategies to 10 Represent and solve word problems involving addition Represent and solve word problems involving subtraction Multiplication and Division Recognise, explain and represent equal groups including using repeated addition Explore arrays Count in 2 Count in 5 Count in 10 Share a total equally between 2, 3 or 4 groups Explore and recall the 2 times tables (Y2 prep) Shape and pattern Identify, describe, sort and classify 2-D shapes Identify, describe, sort and classify 3-D shapes Investigate a repeating pattern Use and follow instructional and positional language Measures Compare the length and mass of 2 or more objects Explore and measure length and mass using non-standard units Explore the concept of 1 metre and 1 kg	Explore the 4 times table skip counting pattern Describe, interpret and represent multiplication using arrays and bar models Describe, interpret and represent division using arrays and bar models Recognise inverse relationship and identify multiplication and division fact families Explore the relationship between 2x to doubling/halving Explore the relationship between 5 & 10 x to doubling/halving Shape and patterns Explore, sort and describe 2-D shapes Lines of symmetry in 2-D shapes Identify 2-D shapes on 3-D shapes Compare and sort 2-D and 3-D shapes Use language to describe position, direction and rotation to follow a route. Measures Draw lengths in centimetres Measure lengths in centimetres Use <, > and = to compare and order lengths in metres and centimetres Read and measure temperature Estimate, measure and understand litres and millilitres Compare and order capacities Solve problems involving measures. Read scales in kilograms and grams Weigh and compare masses in kilograms and grams Solve problems using mass Time Tell the time on an analogue clock: quarter past and quarter to Tell the time on an analogue clock: five-minute intervals Calculate durations of time in minutes and hours Sequence daily events Understand units of time (minutes, hours & days) Money Recognise coins and notes (£ and p) Count combinations of coins. Add amounts Subtract amounts Solve problems involving money. Fractions Explore part-whole relationships Identify unit fractions as part of a shape, object and quantity (halves, quarters and thirds)	Divide 2-digit by 2 using partitioning Divide 2-digit by 3 using partitioning Divide 2-digit by 4 using partitioning Divide 2-digit by 5 using partitioning Shape and patterns Identify angles including right angles and recognise as a quarter of a turn Identify and draw parallel and perpendicular lines Draw parallel and perpendicular lines Draw/make 2-D and 3-D shapes Classify and compare 2-D and 3-D shapes Calculate perimeter Measures Measure and compare lengths Draw and compare lengths Add lengths Subtract lengths Read scales with different intervals when measuring mass Read scales with different intervals when measuring volume Weigh and compare masses with mixed units Weigh and compare capacities with mixed units Estimate mass Estimate capacity Time Tell, record, write and order the time: analogue 12-hour, a.m., p.m. Tell, record, write and order the time: digital, 12-hour, a.m., p.m. Measure durations Calculate durations Compare durations Money I can still add amounts I can still subtract amounts I can still solve problems involving money. Fractions Explore part-whole relationships Identify and represent unit fractions of a shape or object Identify and represent unit fractions of a quantity Identify and represent non-unit fractions of a shape, object Identify and represent non-unit fractions of a quantity Represent equivalent fractions Add fractions with the same denominator Subtract fractions with the same denominator Compare and order fractions with the same denominator Graphs and Data Collect and present data using charts and tables	Measures Select appropriate units to measure Convert between units of measure (g/kg) Convert between units of measure (ml/l) Convert between units of measure (cm/m) Convert between units of measure (m/km) Estimate different measures Compare different measures Calculate different measures Use strategies to investigate problems: trial and improvement, organising using lists and tables, working systematically Time Read analogue 12-hour and 24- hour Read digital, 12-hour and 24- hour Convert between units of time Solve problems involving units of time Money Convert between units of measure (£/p) Fractions Explore different interpretations and representations of fractions: unit fractions of shapes Explore different interpretations and representations of fractions: unit fractions of quantities Explore different interpretations and representations of fractions: unit fractions on a number line Explore different interpretations and representations of fractions: non - unit fractions of shapes Explore different interpretations and representations of fractions: non - unit fractions of quantities Explore different interpretations and representations of fractions: non - unit fractions on a number line Compare and order fractions Find equivalent fractions Add fractions with the same denominator Add fractions with the same denominator that are greater than one Subtract fractions with the same denominator Subtract fractions with the same denominator that are greater than one Represent fractions greater than one Graphs and Data Read, interpret and compare pictograms Read, interpret and compare bar charts Read, interpret and compare time graphs Construct pictograms Construct bar charts Construct time graphs	Investigate the relationship between area and perimeter Classify, order and compare angles (including reflex) Measure angles using a protractor Draw angles using a protractor Identify angles at a point and in shapes. Identify, compare and classify 2-D shapes Reason about regular and irregular polygons Compare and classify triangles and quadrilaterals Identify, classify and compare 3-D shapes Recognise 2-D representations of 3- D shapes Construct simple 3-D shapes Understand and use cube numbers and notation Visualise and estimate the volume of solids (using cm3) Explore the relationship between cubed centimetres and litres Measures Convert between metric units of length Convert between metric units of mass Convert between metric units of capacity Convert between units of time Know and use approximate conversion between imperial and metric units Time I can still convert between units of time I can still solve problems involving units of time Money Reason and calculate in the context of money Fractions Interpret and find fractions in different ways (unit and non-unit fractions) Represent and understand equivalent fractions Understand mixed numbers - Add and subtract fractions Understand improper fractions - Add and subtract fractions Multiply fractions: repeated addition Multiply fractions: as a quantity Connect fractions and decimals (learn key fractions/decimals: ½ ,¼, 1 fifth, 1 tenth) Identify percentage, fraction and decimal equivalents Solve problems involving percentage and fractions Graphs and Data Interpret line graphs Complete and construct a line graph Interpret conversion graphs Read and interpret timetables Coordinates, Position and Direction	add fractions subtract fractions represent multiplication involving fractions multiply two proper fractions divide a fraction by an integer calculate and compare percentages of amounts connect percentages with fractions explore the equivalence of fractions, decimals and percentages use fractions to express proportion identify ratio as a relationship between quantities and as a scale factor unequal sharing involving ratio Graphs and Data calculate the mean construct lines graphs interpret lines graphs construct pie charts interpret and compare pie charts Coordinates, Position and Direction draw a range of geometric shapes using given dimensions and angles describe shapes on a coordinate plane draw shapes on a coordinate plane translate shapes on a coordinate plane reflect shapes on a coordinate plane Algebra understand the use of brackets use knowledge of the order of operations to carry out calculations generate and describe linear number sequences express missing number problems algebraically solve equations with unknown values
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		Solve measures problems involving doubling and halving Compare and measure capacities and volumes using non-standard units Explore litres Apply measuring skills in a real-life context Time Read, write and tell the time to o'clock and half past on analogue clock Sequence daily activities Whole and half turns linked to time Money Name coins and notes and understand their value Represent the same value using different coins Solve problems involving money Fractions Recognise equal and unequal parts Recognise and find half of a shape, object and quantity Recognise and find quarter of a shape, object and quantity Graphs and Data Interpret pictograms (Y2 prep) Interpret block diagrams (Y2 prep) Represent pictograms (Y2 prep) Represent block diagrams (Y2 prep)	Identify non-unit fractions as part of a shape, object and quantity (halves, quarters and thirds) Recognise equivalent fractions $\frac{2}{4}$ and $\frac{1}{2}$ Graphs and Data Interpret pictograms Interpret block diagrams Interpret tables Interpret tally charts Represent pictograms Represent block diagrams Represent tables Represent tally charts	Interpret data using charts and tables	Coordinates, Position and Direction Read coordinates Write coordinates Read and plot coordinates of polygons Describe translation of points Review Review and consolidate mental and written methods for all 4 operations Solve problems involving the 4 operations.	Identify and represent the position of a shape on a grid following a translation Describe positions on a 2-D grid as coordinates Identify and represent the position of a shape following a reflection including coordinates. Review Solve problems with a range of strategies Solve multi-step problems Problem solving with positive and negative numbers Consolidation of key strategies and methods Problem solving and investigations with number	