Loxwood Primary School
Maths

Intent:

At Loxwood, we understand the importance of reasoning and problem solving within maths, to prepare children for the wider world and their future education. Every child is encouraged to be curious, ask questions and to test their ideas.
Our aim is for every child, to reach their full potential by:

- Becoming capable and well-rounded mathematicians that are prepared for the wider world and future education.
- 'knowing numbers' – develop a number sense and be able to recall and apply knowledge rapidly, accurately and efficiently
- Being able to move fluently between different representations of mathematical ideas and be able to use manipulatives to model their mathematical thinking through a process of concrete, pictorial and abstract representations.
- Having the ability to reason mathematically and approaching the subject with a sense of enjoyment and curiosity.
- Being able to make rich connections between different mathematical domains and talk about their learning to help solve everyday problems.
- Solving problems by applying their mathematics to a variety of problems with increasing sophistication.

In Maths, we incorporate our core values (**Resilience, Collaboration, Curiosity, Creativity and Kindness**) to ensure that our children develop as **life-long learners and responsible citizens**. Through Quality First Teaching and having high expectations, we ensure all children (including disadvantaged and SEND) are accessing the curriculum by constantly reviewing and adapting teaching.

Implementation:

We have a coherent and sequenced curriculum, which builds on the progression of knowledge and skills for each year group. Our Maths curriculum at Loxwood is delivered with the support of White Rose Maths scheme as well as NECTM and NRICH. These support teachers to deliver well-structured and exciting mathematical opportunities that enable our children to learn, revisit and progressively develop their knowledge and skills in Maths at an age-appropriate level.

Teachers and other adults working in EYFS are fully trained in supporting early mathematical development and helping our youngest learners to acquire early number sense. This is achieved through practical and engaging activities, which children can access, alongside adults or independently with peers, to practise their Maths skills. In Years 1-6, Maths lessons are planned to follow the small-step mastery approach to acquiring maths skills. Our teachers promote and encourage children to work collaboratively, as well as independently, and provide excellent modelling of all mathematical processes and concepts as part of everyday teaching.

Impact:

At Loxwood, all pupils make excellent progress in maths. This starts with a firm foundation in EYFS. This excellent outcome means that pupils have a firm foundation on which to build further mathematical knowledge in KS2. The majority of our older pupils are equipped with the maths skills they need to succeed at secondary school when they leave us.
Through evaluation of work in children's books at Loxwood, it is clear to see the high quality of mathematics throughout the school. Children are able to confidently talk about their work in maths lessons and can apply age-appropriate skills and knowledge in their work. They are willing to take risks and learn from their mistakes, showing both perseverance and resilience in mathematical learning.
We use Target Tracker as a system for recording ongoing progress using the steps and statements for all Maths areas. In Key Stage 2, we use NFER tests termly to support our ongoing judgements as well as internal and locality moderation. All of these feed into our termly pupil progress meetings with senior leaders and then into our class action plans for the lowest 20% and disadvantaged children.

Overview by Year Group:

EYFS

Week	1	2	3	4	5	6	7	8	9	10	11	12
Autumn	**Getting to Know You**			**Just Like Me!** Match and sort Compare, amounts Compare size, mass & capacity Exploring pattern			**It's me 1, 2, 3!** Representing 1, 2, 3 Comparing 1, 2, 3 Composition of 1, 2, 3 Circles & triangles Positional Language			**Light and Dark** Representing numbers to 5 One more or less Shapes with sides time		
Spring	**Alive in 5!** Introducing zero Comparing numbers to 5 compare mass (2) Compare capacity (2)			**Growing 6, 7, 8** 6, 7 & 8 Combining two numbers making pairs length & height time (2)			**Building 9 & 10** Counting to 9 & 10 Comparing numbers to 10 Bonds to 10 3-D shapes Spatial awareness Patterns			**Consolidation**		
Summer	**T0 20 and beyond** Build numbers beyond 10 Count patterns beyond 10 spatial reasoning 1 Match, rotate, manipulate			**First, then, now** Adding more Taking away Spatial reasoning 2 Compose and decompose			**Find my pattern** Doubling Sharing & grouping Even & odd Spatial reasoning 3 Visualise and build			**On the move** Deepening understanding Patterns & relationships Spatial mapping (4) Mapping		

Year 1

Week	1	2	3	4	5	6	7	8	9	10	11	12
Autumn	**Place Value** (Within 10)					**Addition and Subtraction** (Within 10)					**Geometry** Shape	**Consolidation**
Spring	**Place Value** (Within 20)			**Addition and Subtraction** (Within 20)			**Place Value** (Within 50)		**Measurement** Length and height		**Measurement** Mass and volume	
Sumer	**Multiplication and division**			**Fractions**		**Geometry** Position & direction	**Place Value** (within 100)		**Measurement** Money	**Measurement** Time		**Consolidation**

Year 2

Week	1	2	3	4	5	6	7	8	9	10	11	12
Autumn	**Place Value**				**Addition and Subtraction**					**Geometry** Shape		
Spring	**Measurement** Money		**Multiplication and Division**					**Measurement** Length and Height		**Measurement** Mass, capacity and temperature		

Sumer	**Fractions**	**Measurement** Time	**Statistics**	**Geometry** Position and direction	**Consolidation**

Year 3

Week	1	2	3	4	5	6	7	8	9	10	11	12
Autumn	**Place Value**			**Addition and Subtraction**					**Multiplication and division A**			
Spring	**Multiplication and division B**			**Measurement** Length and perimeter			**Fractions A**			**Measurement** Mass and capacity		
Sumer	**Fractions B**		**Measurement** Money	**Measurement** Time				**Geometry** Shape		**Statistics**		**Consolidation**

Year 4

Week	1	2	3	4	5	6	7	8	9	10	11	12
Autumn	**Place Value**				**Addition and Subtraction**			**Measurement** Area	**Multiplication and division A**			**Consolidation**
Spring	**Multiplication and division B**			**Measurement** Length and perimeter		**Fractions**				**Decimals A**		
Sumer	**Decimals B**		**Measurement** Money		**Measurement** Time		**Consolidation**	**Geometry** Shape		**Statistics**	**Geometry** Position and direction	

Year 5

Week	1	2	3	4	5	6	7	8	9	10	11	12
Autumn	**Place Value**			**Addition and Subtraction**		**Multiplication and division A**			**Fractions A**			
Spring	**Multiplication and division B**			**Fractions B**		**Decimals and percentages**			**Measurement** Perimeter and area		**Statistics**	
Sumer	**Geometry** Shape			**Geometry** Position and direction		**Decimals**			**Negative numbers**	**Measurement** Converting units		**Measurement** Volume

Year 6

Week	1	2	3	4	5	6	7	8	9	10	11	12
Autumn	**Place Value**		**Addition, subtraction, multiplication and division**					**Fractions A**		**Fractions B**		**Measurement** Converting units
Spring	**Ratio**		**Algebra**		**Decimals**		**Fractions, decimals and percentages**		**Area, perimeter and volume**		**Statistics**	
Sumer	**Geometry** Shape			**Geometry** Position and direction		**Theme projects, consolidation and problem solving**						

Progression in Maths:

Mathematical Vocabulary

	EYFS	KS1 Statutory Curriculum Guidance *Non-Statutory Curriculum Guidance* **Teacher Assessment Framework**		KS2 Statutory Curriculum Guidance *Non-Statutory Curriculum Guidance*			
	EFYS Framework **Birth to Five Matters (Reception Age)** **Early Learning Goals**	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
Mathematical vocabulary	Use talk to help work out problems and organise thinking and activities, and to explain how things work and why they might happen. Use talk to help work out problems and organise thinking and activities, and to explain how things work and why they might happen. Use new vocabulary in different contexts	To read and spell mathematical vocabulary, at a level consistent with their increasing word reading and spelling knowledge at year 1.	To read and spell mathematical vocabulary, at a level consistent with their increasing word reading and spelling knowledge at key stage 1.	To read and spell mathematical vocabulary correctly and confidently, using their growing word reading knowledge and their knowledge of spelling.	To read and spell mathematical vocabulary correctly and confidently, using their growing word reading knowledge and their knowledge of spelling.	To read, spell and pronounce mathematical vocabulary correctly.	To read, spell and pronounce mathematical vocabulary correctly.

Number and Place Value

	EYFS	KS1 Statutory Curriculum Guidance *Non-Statutory Curriculum Guidance* **Teacher Assessment Framework**		KS2 Statutory Curriculum Guidance *Non-Statutory Curriculum Guidance*			
	EFYS Framework **Birth to Five Matters (Reception Age)** **Early Learning Goals**	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
Counting	Enjoys reciting numbers from 0-10 (and beyond) and back from 10 to 0. Increasingly confident at putting numerals in order 0 to 10 (ordinality) Counts out up to 10 objects from a larger group. Verbally count beyond 20, recognising the pattern of the counting system.	To count to and across 100, forwards and backwards, beginning with 0 or 1, or from any given number. To identify one more and one less than a given number. To count in multiples of twos, fives and tens from different multiples to develop their recognition of patterns in the number system, including varied and frequent practice through increasingly complex questions. To recognise and create repeating patterns with objects and with shapes.	To count in steps of 2, 3, and 5 from 0, and in tens from any number, forward and backward.	*To continue to count in ones, tens and hundreds, so that pupils become fluent in the order and place value of numbers to 1000.* *To count from 0 in multiples of 4, 8, 50 and 100.*	*To count in tens and hundreds, and maintain fluency in other multiples through varied and frequent practice.* *To count in multiples of 6, 7, 9, 25 and 1000.* *To count backwards through zero to include negative numbers.* *To find 1000 more or less than a given number.*	To count forwards or backwards in steps of powers of 10 for any given number up to 1 000 000. To interpret negative numbers in context, count forwards and backwards with positive and negative whole numbers, including through zero.	
Identifying, Representing and	Counts out up to 10 objects from a larger group. Matches the numeral with a group of items to show how many there are (up to 10).						

estimating numbers	Estimates the number of things, showing understanding of relative size. Subitise (recognise quantities without counting) up to 5.						
Reading and Writing Numbers	Use number names and symbols when comparing numbers, showing interest in large numbers. Matches the numeral with a group of items to show how many there are (up to 10).	To read and write numbers from 1 to 20 in numerals and words. To count, read and write numbers to 100 in numerals.	To read and write numbers to at least 100 in numerals and in words.	To read and write numbers up to 1000 in numerals and in words.		To read and write numbers to at least 1 000 000 and determine the value of each digit.	To *say,* read and write, numbers up to 10 000 000 *accurately* and determine the value of each digit.
Compare and Order	Uses number names and symbols when comparing numbers, showing interest in large numbers. Compare quantities up to10 in different contexts, recognising when one quantity is greater than, less than or the same as the other quantity.		To compare and order numbers from 0 up to 100; use <, > and = signs.	To compare and order numbers up to 1000.	To order and compare numbers beyond 1000.	To order and compare numbers to at least 1 000 000 and determine the value of each digit.	To order and compare numbers up to 10 000 000 *accurately* and determine the value of each digit.
Understanding Place Value	Understand the 'one more than/one less than' relationship between consecutive numbers. Explore the composition of numbers to10. Have a deep understanding of numbers to 10, including the composition of each number.		To recognise the place value of each digit in a two-digit number (tens, ones) to *become fluent and apply their knowledge of numbers to reason with, discuss and solve problems.* *To begin to understand zero as a place holder.*	To recognise the place value of each digit in a three-digit number (hundreds, tens, ones) *and apply partitioning related to place value using varied and increasingly complex problems, building on work in year 2 (for example, 146 = 100 + 40 and 6, 146 = 130 + 16).*	To recognise the place value of each digit in a four-digit number. *To begin to extend their knowledge of the number system to include the decimal numbers and fractions that they have met so far.*	*To extend and apply their understanding of the number system to the decimal numbers and fractions that they have met so far.*	To use negative numbers in context, and calculate intervals across zero.

Rounding					To round any number to the nearest 10, 100 or 1000. *To connect estimation and rounding numbers to the use of measuring instruments.*	To round any number up to 1 000 000 to the nearest 10, 100, 1000, 10 000 and 100 000.	To round any whole number to a required degree of accuracy.

Roman Numerals					To read Roman numerals to 100 (I to C) and know that over time, the numeral system changed to include the concept of zero and place value.	To read Roman numerals to 1000 (M) and recognise years written in Roman numerals.	
Solve problems	Begin to explore and work out mathematical problems, using signs and strategies of their own choice, including (when appropriate) standard numerals, tallies and + or -.	*To practise ordinal numbers and solve simple concrete problems.*	To use place value and number facts to solve *related* problems *to develop fluency*.	To solve number problems and practical problems involving these ideas.	To solve number and practical problems that involve all of the above and with increasingly large positive numbers.	To solve number problems and practical problems that involve all of the above.	To solve number and practical problems that involve all of the above.

Addition and Subtraction

	EYFS	KS1 Statutory Curriculum Guidance *Non-Statutory Curriculum Guidance* **Teacher Assessment Framework**		KS2 Statutory Curriculum Guidance *Non-Statutory Curriculum Guidance*			
	EFYS Framework **Birth to Five Matters (Reception Age)** **Early Learning Goals**	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
Mental Calculations	Engages in subitising numbers to four and maybe five. Shows an awareness that numbers are made up (composed) of smaller numbers, exploring partitioning in different ways with a wider range of objects. Begin to conceptually subitise larger number by subitising smaller groups within the number. Automatically recall (without reference to rhymes, counting or other aids) number bonds up to 5 (including subtraction facts) and some number bonds to 10, including double facts. Have a deep understanding of numbers to 10, including the composition of each number. Subitise (recognise quantities without counting) up to 5.	To add and subtract one-digit and two-digit numbers to 20, including zero. *To realise the effect of adding or subtracting zero.*	*To extend the language of addition and subtraction to include sum and difference.* To show that addition of two numbers can be done in any order (commutative) and subtraction of one number from another cannot. To add and subtract numbers using an efficient strategy, explaining their method verbally using concrete objects, pictorial representations, and mentally, including: a two-digit number and ones, a two-digit number and tens, two two-digit numbers, add three one-digit numbers.	To add and subtract numbers mentally, including: *two-digit numbers, where the answers could exceed 100,* a three-digit number and ones, a three-digit number and tens and a three-digit number and hundreds.	*To continue to practise both mental methods and columnar addition and subtraction with increasingly large numbers to aid fluency.*	To add and subtract numbers mentally with increasingly large numbers.	To perform mental calculations, including with mixed operations and large numbers.
Number Bonds	Shows an awareness that numbers are made up (composed) of smaller numbers, exploring partitioning in different ways with a wider range of objects. In practical activities, adds on and subtracts one with numbers to 10. Automatically recall (without	To *memorise*, represent and use number bonds and related subtraction facts within 20.	To recall all number bonds to and within 10 and use these to reason with and calculate bonds to and within 20, recognising other associated additive relationships. To recall and use addition and subtraction facts to 20 *to become fluent in deriving*				

	reference to rhymes, counting or other aids) number bonds up to 5 (including subtraction facts) and some number bonds to 10, including double facts. Have a deep understanding of numbers to 10, including the composition of each number. Subitise (recognise quantities without counting) up to 5.		*associative facts (e.g. 10 – 7 = 3, 100 – 70 = 30)* and derive and use related facts up to 100.				
Written Calculations	Begin to explore and work out mathematical problems, using signs and strategies of their own choice, including (when appropriate) standard numerals, tallies and + or -.	To read, write and interpret mathematical statements involving addition (+), subtraction (–) and equals (=) signs.	*To begin to record addition and subtraction in columns to support place value and prepare for formal written methods with larger numbers.*	*To use the understanding of place value and partitioning to enable* adding and subtracting numbers with up to three digits, using formal written methods of columnar addition and subtraction *to become fluent*.	To add and subtract numbers with up to four digits using the formal written methods of columnar addition and subtraction where appropriate.	To add and subtract whole numbers with more than four digits, including using formal written methods of columnar addition and subtraction fluently.	
Inverse Operations, Estimating and Checking Answers	Shows an awareness that numbers are made up (composed) of smaller numbers, exploring partitioning in different ways with a wider range of objects.		To recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems.	To estimate the answer to a calculation and use inverse operations to check answers.	To estimate and use inverse operations to check answers to a calculation.	To use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy.	*To round answers to a specified degree of accuracy, for example, to the nearest 10, 20, 50 etc., but not to a specified number of significant figures.*
Order of Operations							To use their knowledge of the order of operations to carry out calculations involving the four operations.

Solve problems	Explore and represent patterns within numbers up to 10, including evens and odds, double facts and how quantities can be distributed evenly.	To *discuss* and solve one-step problems *(in familiar practical contexts)* that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems. *Problems include the terms: put together, add, altogether, total, take away, distance between, difference between, more than and less than, so that pupils develop the concept of addition and subtraction and are enable to use these operations flexibly*.	To solve problems with addition and subtraction: using concrete objects and pictorial representations, including those involving numbers, quantities and measures applying their increasing knowledge of mental and written methods.				

Multiplication and Division

	EYFS	KS1 Statutory Curriculum Guidance *Non-Statutory Curriculum Guidance* **Teacher Assessment Framework**		KS2 Statutory Curriculum Guidance *Non-Statutory Curriculum Guidance*			
	EFYS Framework **Birth to Five Matters (Reception Age)** **Early Learning Goals**	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
Mental Calculations	Shows an awareness that numbers are made up (composed) of smaller numbers, exploring partitioning in different ways with a wider range of objects. Explore and represent patterns within numbers up to 10, including evens and odds, double facts and how quantities can be distributed evenly.		*To begin to use other multiplication tables and recall multiplication facts, including using related division facts to perform written and mental calculations.* *To begin to relate multiplication and division facts to fractions and measures (e.g., 40 ÷ 2 = 20, 20 is a half of 40).* To show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot, *to develop multiplicative reasoning*.	To write and calculate mathematical statements for multiplication and division using the multiplication tables that they know, including for two-digit numbers times one-digit numbers, using *efficient* mental *methods, for example, using commutativity and associativity,* and progressing to formal *reliable* written methods *of short multiplication and division*.	*To combine their knowledge of number facts and rules of arithmetic to solve mental and written calculations, e.g. 2 x 6 x 5 = 10 x 6 = 60.* *To practise mental methods and extend this to three-digit numbers to derive associative facts, (e.g. 600 ÷ 3 = 200 can be derived from 2 x 3 = 6).* To recognise and use factor pairs and commutativity in mental calculations. To use place value, known and derived facts to multiply and divide mentally, including: multiplying by 0 and 1; dividing by 1; multiplying together three numbers.	To multiply and divide numbers mentally drawing upon known facts.	To perform mental calculations, including with mixed operations and large numbers.

	EFYS Framework Birth to Five Matters (Reception Age) Early Learning Goals	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Multiplication and Division Facts	Show awareness that numbers are made up (composed) of smaller numbers, exploring partitioning in different ways with a wide range of objects. Explore and represent patterns within numbers up to 10, including evens and odds, double facts and how quantities can be distributed evenly. Automatically recall (without reference to rhymes, counting or other aids) number bonds up to 5 (including subtraction facts) and some number bonds to 10, including double facts.	*To make connections between arrays, number patterns, and counting in twos, fives and tens. Through grouping and sharing small quantities, pupils begin to understand: multiplication and division; doubling numbers and quantities; and finding simple fractions of objects, numbers and quantities.*	*To use a variety of language to describe multiplication and division.* To count from 0 in multiples of 4, 8, 50 and 100. To recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers and use them to solve simple problems, demonstrating an understanding of commutativity as necessary. *To connect the 10 multiplication table to place value, and the 5 multiplication table to the divisions on the clock face.*	To recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables *when they are calculating mathematical statements in order to improve fluency.* *To connect the 2, 4 and 8 multiplication tables through doubling.*	To recall multiplication and division facts for multiplication tables up to 12 × 12 *to aid fluency.* *To write statements about the equality of expressions (for example, use the distributive law 39 × 7 = 30 × 7 + 9 × 7 and associative law (2 × 3) × 4 = 2 × (3 × 4)).*	*To apply all the multiplication tables and related division facts frequently, commit them to memory and use them confidently to make larger calculations.*	*To continue to use all the multiplication tables to calculate mathematical statements in order to maintain their fluency.*
Written calculations			To calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication (×), division (÷) and equals (=) signs. *To begin to use other multiplication tables and recall multiplication facts, including using related division facts to perform written and mental calculations.*	To write and calculate mathematical statements for multiplication and division using the multiplication tables that they know, including for two-digit numbers times one-digit numbers, using *efficient* mental *methods, for example, using commutativity and associativity,* and progressing to formal *reliable* written methods	To multiply two-digit and three-digit numbers by a one-digit number using the formal written layout *of short multiplication with exact answers.* *To become fluent in the formal written method of short division with exact answers.*	To multiply numbers up to four digits by a one- or two-digit number using a formal written method, including long multiplication for two-digit numbers fluently. To divide numbers up to four digits by a one-digit number using the formal written method of short division and interpret remainders appropriately for the context fluently.	To multiply multi-digit numbers up to four digits by a two-digit whole number using the formal written method of long multiplication. To divide numbers up to four digits by a two-digit whole number using the formal written method of long division, and interpret remainders as whole number remainders,

				of short multiplication and division. (included in mental calculation section)		To multiply and divide whole numbers and those involving decimals by 10, 100 and 1000.	fractions, or by rounding, as appropriate for the context. To divide numbers up to four digits by a two-digit number using the formal written method of short division where appropriate, interpreting remainders according to the context. Perform mental calculations, including with mixed operations and large numbers.
Properties of Number	Spot patterns in the environment, beginning to identify the pattern 'rule'. Explore and represent patterns within numbers up to 10, including evens and odds, double facts and how quantities can be distributed evenly.					*To use and understand the terms factor, multiple and prime, square and cube numbers and use them to construct equivalence statements.* To identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers. To know and use the vocabulary of prime numbers, prime factors and composite (non-prime) numbers. To establish whether a number up to 100 is prime and recall prime numbers up to 19. To recognise and use square numbers and cube numbers, and the notation for squared (^{2}) and cubed (^{3}).	To identify common factors, common multiples and prime numbers.
Order of operations							To use their knowledge of the order of operations to carry out calculations involving the four operations.

Solve problems	Explore and represent patterns within numbers up to 10, including evens and odds, double facts and how quantities can be distributed evenly.	To solve one-step problems involving multiplication and division, by calculating the answer using concrete objects, pictorial representations and arrays with the support of the teacher.	To solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts.	To solve *simple* problems *in contexts, deciding which of the four operations to use and why.* These include missing number problems, involving multiplication and division, including *measuring* and positive integer scaling problems and correspondence problems in which n objects are connected to m objects.	To solve *two-step* problems *in contexts* involving multiplying and adding, including using the distributive law to multiply two-digit numbers by one digit, integer scaling problems and harder correspondence problems, such as n objects are connected to m objects.	To solve problems involving multiplication and division including using their knowledge of factors and multiples, squares and cubes. To solve problems, *including in missing number problems,* involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign *(to indicate equivalence).* To solve problems involving multiplication and division, including scaling by simple fractions and problems involving simple rates.	To solve problems involving addition, subtraction, multiplication and division. To use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy.

Fractions, Decimals and Percentages

	EYFS	KS1 Statutory Curriculum Guidance *Non-Statutory Curriculum Guidance* **Teacher Assessment Framework**		KS2 Statutory Curriculum Guidance *Non-Statutory Curriculum Guidance*			
	EFYS Framework **Birth to Five Matters (Reception Age)** **Early Learning Goals**	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
Counting			*To count in fractions up to 10, starting from any number and using the* $\frac{11}{22}$ *and* $\frac{2}{4}$ $\frac{2}{4}$ *equivalence on the number line.*	To count up and down in tenths; recognise that tenths arise from dividing an object into 10 equal parts and in dividing one-digit numbers or quantities by ten.	To count up and down in hundredths; recognise that hundredths arise when dividing an object by one hundred and dividing tenths by ten.	*To extend counting from year 4, using decimals and fractions including bridging zero, for example on a number line.* *To continue to practise counting forwards and backwards in simple fractions.*	
Counting, Finding and Naming Fractions		To recognise, find and name a half as one of two equal parts of an object, shape or quantity *by solving problems*. To recognise, find and name a quarter as one of four equal parts of an object, shape or quantity *by solving problems*. *To connect halves and quarters to the equal sharing and grouping of sets of objects and to measures, as well as recognising and combining halves and quarters as parts of a whole.*	To recognise, find, name, identify and write fractions $\frac{1}{3}$ $\frac{3}{3}$ $\frac{11}{44}$ $\frac{22}{44}$ $\frac{11}{22}$ and $\frac{33}{44}$ of a length, number, shape, set of objects or quantity and know that all parts must be equal parts of the whole. *To connect unit fractions to equal sharing and grouping, to numbers when they can be calculated, and to measures, finding fractions of lengths, quantities, sets of objects or shapes. They meet* $\frac{33}{44}$ *as the first example of a non-unit fraction.*	*To understand the relation between unit fractions as operators (fractions of), and division by integers.* To recognise, *understand* and use fractions as numbers: unit fractions and non-unit fractions with small denominators *as numbers on the number line (going beyond 0 -1 and relating this to measure), and deduce relations between them, such as size and equivalence.* To recognise, find and write fractions of a discrete set of objects: unit fractions and non-unit fractions with small denominators.	*To make connections between fractions of a length, of a shape and as a representation of one whole or set of quantities.* *To know that decimals and fractions are different ways of expressing numbers and proportions.* *To understand the relation between non-unit fractions and multiplication and division of quantities, with particular emphasis on tenths and hundredths.*	To identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths.	

Comparing & ordering fractions				To compare and order unit fractions, and fractions with the same denominators.		To compare and order fractions whose denominators are all multiples of the same number.	To compare and order fractions, including fractions > 1.
Adding and subtracting fractions				To add and subtract fractions with the same denominator within one whole *through a variety of increasingly complex problems to improve fluency.*	To add and subtract fractions with the same denominator *to become fluent through a variety of increasingly complex problems beyond one whole.*	To add and subtract fractions with the same denominator and denominators that are multiples of the same number *to become fluent through a variety of increasingly complex problems*. To recognise mixed numbers and improper fractions and convert from one form to the other and write mathematical statements > 1 as a mixed number.	To add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions *starting with fractions where the denominator of one fraction is a multiple of the other and progress to varied and increasingly complex problems*.
Multiplying and dividing fractions						*To continue to develop their understanding of fractions as numbers, measures and operators by finding fractions of numbers and quantities.* To multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams.	To multiply simple pairs of proper fractions, writing the answer in its simplest form *using a variety of images to support their understanding of multiplication with fractions*. To divide proper fractions by whole numbers.
Equivalence			To write simple fractions for example, $\frac{11}{22}$ of 6 = 3 and recognise the equivalence $\frac{2}{4}$ $\frac{2}{4}$ and $\frac{11}{22}$.	To recognise and show, using diagrams, equivalent fractions with small denominators.	To use factors and multiples to recognise equivalent fractions and simplify where appropriate. To recognise and show, using diagrams, families of common equivalent fractions.	To read and write decimal numbers as fractions. To recognise and use thousandths and relate them to tenths, hundredths, decimal equivalents *and measures*. To recognise the per cent	To recall and use equivalences between simple fractions, decimals and percentages, including in different contexts. To use common factors to simplify fractions; use common multiples to express fractions in the

					To recognise and write decimal equivalents of any number of tenths or hundredths. To recognise and write decimal equivalents to $\frac{11}{44}$, $\frac{11}{22}$, $\frac{33}{44}$.	symbol (%) and understand that per cent relates to 'number of parts per hundred', and write percentages as a fraction with denominator 100, and as a decimal.	same denomination.
Comparing and ordering decimals					To learn decimal notation and the language associated with it, including in the context of measurements. To represent numbers with one or two decimal places in several ways, such as on number lines. To compare numbers, amounts and quantities with the same number of decimal places up to two decimal places.	To read, *say,* write, order and compare numbers with up to three decimal places.	To identify the value of each digit in numbers given to three decimal places.
Rounding Decimals					To round decimals with one decimal place to the nearest whole number.	To round decimals with two decimal places to the nearest whole number and to one decimal place.	
Adding and subtracting decimals						*To mentally add and subtract tenths, and one-digit whole numbers and tenths.* *To practise adding and subtracting decimals, including a mix of whole numbers and decimals, decimals with different numbers of decimal places, and complements of 1.*	

Multiplying and dividing decimals					To find the effect of dividing a one or two-digit number by 10 and 100, identifying the value of the digits in the answer as ones, tenths and hundredths.		To multiply and divide numbers by 10, 100 and 1000 giving answers up to three decimal places. To associate a fraction with division and calculate decimal fraction equivalents for a simple fraction. To multiply one-digit numbers with up to two decimal places by whole numbers *in practical contexts, such as measures and money*.
Multiplying and dividing decimals							*To multiply and divide numbers with up to two decimal places by one-digit and two-digit whole numbers in practical contexts involving measures and money.* To use written division methods in cases where the answer has up to two decimal places. *To recognise division calculations as the inverse of multiplication.*
Solve problems				To solve problems that involve all of the above.	To solve problems involving increasingly harder fractions to calculate quantities, and fractions to divide quantities, including non-unit fractions where the answer is a whole number. To solve simple measure and money problems involving fractions and decimals to two decimal places.	To solve problems involving numbers up to three decimal places. To *make connections between percentages, fractions and decimals and relate this to finding 'fractions of' to solve* problems which require knowing percentage and decimal equivalents of $\frac{11}{22}$, $\frac{11}{44}$, $\frac{11}{55}$, $\frac{22}{55}$, $\frac{44}{55}$ and those fractions with a denominator of a multiple of 10 or 25.	To solve problems which require answers to be rounded to specified degrees of accuracy *and checking the reasonableness of their answers*.

Algebra

	EYFS	KS1 Statutory Curriculum Guidance *Non-Statutory Curriculum Guidance* **Teacher Assessment Framework**		KS2 Statutory Curriculum Guidance *Non-Statutory Curriculum Guidance*			
	EFYS Framework **Birth to Five Matters (Reception Age)** **Early Learning Goals**	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
Algebra	It is important that children develop positive attitudes and interests in mathematics, look for patterns and relationships & spot connections. Spots patterns in the environment, beginning to identify the patter 'rule'. Chooses familiar objects to create and recreate repeating patterns beyond AB patterns and begins to identify the unit of repeat. Verbally count beyond 20, recognising the pattern of the counting system. Compare quantities up to 10 in different contexts, recognising when one quantity is greater than, less than or the same as the other quantity. Explore and represent patterns within numbers up to 10, including evens and odds, double facts and how quantities can be distributed equally.						To introduce the language of algebra as a means for solving a variety of problems. To introduce the use of symbols and letters to represent variables and unknowns in mathematical familiar situations, such as: missing numbers, lengths, coordinates and angles. To use simple formulae. To generate and describe linear number sequences. To express missing number problems algebraically. To find pairs of numbers that satisfy an equation with two unknowns. To enumerate possibilities of combinations of two **variables.**

Measurement

	EYFS	KS1 Statutory Curriculum Guidance *Non-Statutory Curriculum Guidance* **Teacher Assessment Framework**		KS2 Statutory Curriculum Guidance *Non-Statutory Curriculum Guidance*			
	EFYS Framework **Birth to Five Matters (Reception Age)** **Early Learning Goals**	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
Describe, Measure, Compare and Solve (All Strands)	Develop their spatial reasoning skills across all areas of mathematics including shape, space and measure. Enjoy tackling problems involving prediction and discussion of comparisons of length, weight or capacity, paying attention to fairness and accuracy. Become familiar with measuring tools in everyday experiences and play.	To compare, describe and solve practical problems for: lengths and heights, mass/weight, capacity and volume, time. To measure and begin to record the following: lengths and heights, mass/weight, capacity and volume, time. *To move from using and comparing different types of quantities and measures using non-standard units, including discrete (for example, counting) and continuous (for example, liquid) measurement, to using manageable common standard units using measuring tools, such as a ruler, weighing scales and containers.*	To choose and use appropriate standard units *with increasing accuracy using their knowledge of the number system* to estimate and measure length/height in any direction (m/cm); mass (kg/g); temperature (°C); capacity (litres/ml) to the nearest appropriate unit, using rulers, scales, thermometers and measuring vessels. *To use the appropriate language and record using standard abbreviations.* To compare and order lengths, mass, volume/capacity and record the results using >, < and =. *To compare measures including simple multiples such as 'half as high'; 'twice as wide'.*	To measure *using the appropriate tools and units*, compare (*including simple scaling by integers)* add and subtract *using mixed units*: lengths (m/cm/mm); mass (kg/g); volume/capacity (l/ml).	To estimate, compare and calculate different measures, including money in pounds and pence.	To use all four operations to solve problems involving measure using decimal notation, including scaling *and conversions*.	*To use a number line, to add and subtract positive and negative integers for measures such as temperature.* To solve problems involving the calculation and conversion of units of measure, using decimal notation up to three decimal places where appropriate.
Converting Units of Measure (All Strands)					To use multiplication to convert from larger to smaller units. To convert between different units of measure and build on their understanding of place	To use the knowledge of place value and multiplication and division to convert between standard units. To convert between different units of metric	To use, read, write and convert between standard units, converting measurements of length, mass, volume and time from a smaller unit of measure to a larger unit, and vice versa, using

					value and decimal notation to record metric measures, including money.	measure. To understand and use approximate equivalences between metric units and common imperial units.	decimal notation to up to three decimal places. To convert between miles and kilometres. To know approximate conversions to tell if an answer is sensible.
Telling Time	Develop their spatial reasoning skills across all areas of mathematics including shape, space and measure. Begin to experience measuring with timers and calendars. Is increasingly able to order and sequence events using language related to time.	To sequence events in chronological order using language. To recognise and use language relating to dates, including days of the week, weeks, months and years. To tell the time to the hour and half past the hour and draw the hands on a clock face to show these times.	To read, tell and write the time to five minutes, including quarter past/to the hour/half hour and draw the hands on a clock face to show these times. To become fluent in telling the time on analogue clocks and recording it. To know the number of minutes in an hour and the number of hours in a day. To compare and sequence intervals of time.	To tell and write the time from an analogue clock, including using Roman numerals from I to XII, and 12-hour and 24-hour clocks. To begin to use digital 12-hour clocks and record their times in preparation for using digital 24-hour clocks in year 4. To estimate and read time with increasing accuracy to the nearest minute; record and compare time in terms of seconds, minutes and hours. To use vocabulary such as o'clock, a.m./p.m., morning, afternoon, noon and midnight. To know the number of seconds in a minute and the number of days in each month, year and leap year. To compare durations of events.	To read, write and convert time between analogue and digital 12- and 24-hour clocks. To solve problems involving converting from hours to minutes; minutes to seconds; years to months; weeks to days.	To solve problems involving converting between units of time.	

Perimeter, Area and Volume				To measure the perimeter of simple 2D shapes.	To measure and calculate the perimeter of a rectilinear figure (including squares) in centimetres and metres. To know perimeter can be expressed algebraically as 2(a + b) where a and b are the dimensions in the same unit. To find the area of rectilinear shapes by counting squares. To relate area to arrays and multiplication.	To measure and calculate the perimeter of composite rectilinear shapes in centimetres and metres including using the relations of perimeter. Note: Missing measures questions can be expressed algebraically. To calculate and compare the area of rectangles (including squares), and including using standard units, square centimetres (cm^2) and square metres (m^2), use the area of rectangles to find unknown lengths and estimate the area of irregular shapes. Note: Missing measures questions can be expressed algebraically. To calculate the area from scale drawings using given measurements. To estimate volume.	To recognise that shapes with the same areas can have different perimeters and vice versa. To recognise when it is possible to use formulae for area and volume of shapes. To relate the area of rectangles to parallelograms and triangles and calculate their areas, understanding and using the formulae (in words or symbols) to do this. To calculate the area of parallelograms and triangles. To calculate, estimate and compare volume of cubes and cuboids using standard units, including cubic centimetres (cm^3) and cubic metres (m^3), and extending to other units (for example, mm^3 and km^3).

Properties of Shapes

	EYFS	KS1 Statutory Curriculum Guidance *Non-Statutory Curriculum Guidance* Teacher Assessment Framework		KS2 Statutory Curriculum Guidance *Non-Statutory Curriculum Guidance*			
	EFYS Framework Birth to Five Matters (Reception Age) Early Learning Goals	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Recognise 2D and 3D Shapes and Their Properties	Develop their spatial reasoning skills across all areas of mathematics including shape, space and measure. Uses informal language and analogies (e.g. heart-shaped and hand-shaped leaves), as well as mathematical terms to describe shapes. Enjoys composing and decomposing shapes learning which shapes combine to make other shapes.	To recognise, handle and name common 2D and 3D shapes in different orientations/sizes and relate everyday objects fluently. To recognise that rectangles, triangles, cuboids and pyramids are not always similar to each other.	Pupils read and write names for shapes that are appropriate for their word reading and spelling. To handle, identify and describe the properties of 2D shapes, including the number of sides and line symmetry in a vertical line. To handle, identify and describe the properties of 3D shapes, including the number of edges, vertices and faces. To identify 2D shapes on the surface of 3D shapes.	To describe the properties of 2D and 3D shapes using accurate language. To extend knowledge of the properties of shapes is extended at this stage to symmetrical and non-symmetrical polygon and polyhedron. To recognise 3D shapes in different orientations and describe them.	To identify lines of symmetry in 2D shapes presented in different orientations. To recognise line symmetry in a variety of diagrams, including where the line of symmetry does not dissect the original shape.	To identify 3D shapes, including cubes and other cuboids, from 2D representations.	To illustrate and name parts of circles, including radius, diameter and circumference and know that the diameter is twice the radius. To express algebraically the relationship between angles and lengths.
Compare and Classify Shapes	Develop their spatial reasoning skills across all areas of mathematics including shape, space and measure. Uses informal language and analogies (e.g. heart-shaped and hand-shaped leaves), as well as mathematical terms to describe shapes. Enjoys composing and decomposing shapes learning which shapes combine to make other shapes.		To identify, compare and sort common 2D and 3D shapes and everyday objects on the basis of their properties and use vocabulary precisely.		To compare lengths and angles to decide if a polygon is regular or irregular. To compare and classify geometric shapes, including different quadrilaterals and triangles, based on their properties and sizes.	To distinguish between regular and irregular polygons based on reasoning about equal sides and angles.	To compare and classify geometric shapes based on their properties and sizes and find unknown angles in any triangles, quadrilaterals, and regular polygons using known measurements.

Drawing 2D Shapes and Constructing 3D Shapes	Develop their spatial reasoning skills across all areas of mathematics including shape, space and measure. Enjoys composing and decomposing shapes learning which shapes combine to make other shapes. Uses own ideas to make models of increasing complexity, selecting blocks needed, solving problems and visualising what they will build. Investigates turning and flipping objets in order to make shapes fit and create models; predicting and visualising how they will look (spatial reasoning)		*Pupils draw lines and shapes using a straight edge.*	To connect decimals and rounding to drawing and measuring straight lines in centimetres, in a variety of contexts. To identify horizontal and vertical lines and pairs of perpendicular and parallel lines. To draw 2D shapes and make 3D shapes using modelling materials.	To draw with increasing accuracy and develop mathematical reasoning to analyse shapes and their properties and confidently describe the relationships between them. To complete a simple symmetric figure with respect to a specific line of symmetry.	To become accurate in drawing lines with a ruler to the nearest millimetre, and measuring with a protractor. To use conventional markings for parallel lines and right angles	To draw 2D shapes and nets accurately using given dimensions and angles using measuring tools, conventional markings and labels for lines and angles. To recognise, describe and build simple 3D shapes, including making nets.
Angles				To recognise angles as a property of shape or a description of a turn. To identify right angles, recognise that two right angles make a half-turn, three make three quarters of a turn and four a complete turn To identify whether angles are greater than or less than a right angle.	To identify acute and obtuse angles and compare and order angles up to two right angles by size in preparation for using a protractor.	To know angles are measured in degrees; estimate and compare acute, obtuse and reflex angles. To draw given angles, and measure them in degrees. To identify: angles at a point and one whole turn (total 360˚), angles at a point on a straight line and $\frac{1}{2}$ $\frac{1}{2}$ a turn (total 180˚) and other multiples of 90˚. *To use the term diagonal and make conjectures about the angles formed between sides, and between diagonals and parallel sides.* To use the properties of rectangles to deduce related facts and find missing lengths and angles *by using angle sum facts and other properties to make deductions about missing angles and relate these to missing number problems.*	To recognise angles where they meet at a point, are on a straight line, or are vertically opposite, and find missing angles.

Position and Direction

	EYFS	KS1 Statutory Curriculum Guidance *Non-Statutory Curriculum Guidance* **Teacher Assessment Framework**		KS2 Statutory Curriculum Guidance *Non-Statutory Curriculum Guidance*			
	EFYS Framework **Birth to Five Matters (Reception Age)** **Early Learning Goals**	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
Position, Direction and Movement	Develop their spatial reasoning skills across all areas of mathematics including shape, space and measure. Use spatial language, including following and giving directions, using relative terms and describing what they see from different viewpoints. Investigates turning and flipping objets in order to make shapes fit and create models; predicting and visualising how they will look (spatial reasoning) May enjoy making simple maps of familiar and imaginative environments, with landmarks.	To describe position, direction and movement, including whole, half, quarter and three-quarter turns *in both directions and connect clockwise with the movement on a clock face*. *To use the language of position, direction and motion, including: left and right, top, middle and bottom, on top of, in front of, above, between, around, near, close and far, up and down, forwards and backwards, inside and outside.*	To use mathematical vocabulary to describe position, direction and movement, including movement in a straight line and distinguishing between rotation as a turn and in terms of right angles for quarter, half and three-quarter turns (clockwise and anticlockwise).		To describe positions on a 2D grid as coordinates in the first quadrant. *To draw a pair of axes in one quadrant, with equal scales and integer labels.* *To read, write and use pairs of coordinates, including using coordinate plotting ICT tools.* To plot specified points and draw sides to complete a given polygon. To describe movements between positions as translations of a given unit to the left/right and up/down.	To identify, describe and represent the position of a shape following a reflection (*in lines that are parallel to the axes)* or translation, using the appropriate language, and know that the shape has not changed.	*To draw and label a pair of axes in all four quadrants with equal scaling.* To describe positions on the full coordinate grid (all four quadrants). To draw and *label* simple shapes – *rectangles (including squares), parallelograms and rhombuses, specified by coordinates in the four quadrants, predicting missing coordinates using the properties of shapes.* To translate simple shapes *where coordinates may be expressed algebraically* on the coordinate plane and reflect them in the axes.
Patterns	It is important that children develop positive attitudes and interests in mathematics, look for patterns and relationships & spot connections. Spots patterns in the environment, beginning to identify the patter 'rule'. Chooses familiar objects to create		To order and arrange combinations of mathematical objects and *shapes, including those in different orientations,* in patterns and sequences.				

	and recreate repeating patterns beyond AB patterns and begins to identify the unit of repeat. Verbally count beyond 20, recognising the pattern of the counting system. Explore and represent patterns within numbers up to 10, including evens and odds, double facts and how quantities can be distributed equally.						

Statistics

	EYFS	KS1 Statutory Curriculum Guidance *Non-Statutory Curriculum Guidance* **Teacher Assessment Framework**		KS2 Statutory Curriculum Guidance *Non-Statutory Curriculum Guidance*			
	EFYS Framework **Birth to Five Matters (Reception Age)** **Early Learning Goals**	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
Record, Present and Interpret Data			*To record, interpret, collate, organise and compare information.* To interpret and construct simple pictograms, tally charts, block diagrams and simple tables *(e.g. many-to-one correspondence in pictograms with simple ratios 2, 5, 10 scales).* To ask and answer simple questions by counting the number of objects in each category and sorting the categories by quantity. To ask and answer questions about totalling and comparing categorical data.	To interpret and present data using bar charts, pictograms and tables *and use simple scales with increasing accuracy*.	*To understand and use a greater range of scales in data representations.* To interpret and present discrete and continuous data using appropriate graphical methods, including bar charts and time graphs.	*To begin to decide which representations of data are most appropriate and why.* *To connect coordinates and scales to the interpretation of time graphs.* To complete, read and interpret information in tables, including timetables.	*To connect conversion from kilometres to miles in measurement to its graphical representation.* *To connect work on angles, fractions and percentages to the interpretation of pie charts.* To interpret and construct pie charts and line graphs *(relating to two variables)* and use these to solve problems.
Solve Problems				To solve one-step and two-step questions using information presented in scaled bar charts and pictograms and tables.	To solve comparison, sum and difference problems using information presented in bar charts, pictograms, tables and other graphs.	To solve comparison, sum and difference problems using information presented in a line graph.	*To know when it is appropriate to find the mean of a data set.* To calculate and interpret the mean as an average.

Ratio and Proportion

	EYFS	KS1 Statutory Curriculum Guidance *Non-Statutory Curriculum Guidance* **Teacher Assessment Framework**		KS2 Statutory Curriculum Guidance *Non-Statutory Curriculum Guidance*			
	EFYS Framework **Birth to Five Matters (Reception Age)** **Early Learning Goals**	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
							To recognise proportionality in contexts when the relations between quantities are in the same ratio, e.g. recipes. To solve problems involving the relative sizes of two quantities where missing values can be found by using integer multiplication and division facts. To solve problems involving the calculation of percentages and the use of percentages for comparison *including linking percentages or 360° to calculating angles of pie chart.* To solve problems involving similar shapes where the scale factor is known or can be found. To solve problems involving unequal *quantities*, sharing and grouping using knowledge of fractions and multiples.
Key	EYFS Framework Early Learning Goal Non Statutory Birth to 5 matters document Vocabulary	National Curriculum Objectives Children can: Vocabulary					