St Michael's C.E Primary School

Mathematics Curriculum 2023-2024

Our curriculum intent at St Michael's is to provide a broad, exciting, and challenging curriculum of the highest quality for the children in our care; encouraging, motivating and ensuring all children develop a love of learning, in order to achieve their full potential.

Our curriculum will be implemented through knowledge-led experiences, enabling the children to increase their knowledge, learn and master new skills and therefore, deepen their understanding in a wide range of subjects.

The impact of this broad, exciting, and challenging curriculum is to inspire and motivate the young people in our care to become lifelong learners. We also provide a Christian community to enable all to value faith. All pupils are encouraged to be proud of their own culture, religion and language and show respect to those of others.

The focus in Maths is to improve the teaching and learning of Maths throughout the school to accelerate progress for all pupils.

St Michael's CE Primary Maths Curriculum
2023-2024

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Reception						
Year 1	Number and Place Value	Number and Place Value / Addition and Subtraction	Geometry / Number and Place Value / Addition and Subtraction	Addition and Subtraction / Number Facts	Number and Place Value / Number Facts	Number Facts / Shape, Space and Measure
Year 2	Number and Place Value / Addition and Subtraction	Number Facts / Addition and Subtraction / Multiplication	Multiplication and Division	Geometry / Addition and Subtraction	Money / Fractions / Shape, Space and Measure	Multiplication and Division / Shape, Space and Measure
Year 3	Addition and Subtraction / Number Facts / Number and Place Value / Addition and Subtraction	Addition and Subtraction / Number Facts / Other	Geometry / Addition and Subtraction	Addition / Multiplication / Number Facts / Subtraction	Fractions	Fractions / Shape, Space and Measure

Year						
Year 4	Addition and Subtraction	Geometry	Number Facts	Multiplication and Division	Fractions	Geometry
		Other		Number Facts		Space, Shape and Measure
	Number and Place Value	Number Facts	Multiplication and Division			Number Facts
	Number Facts			Geometry		Other
Year 5	Number and Place Value	Number Facts	Geometry	Multiplication and Division	Number and Place Value	Shape, Space and Measure
	Money		Other			
	Number and Place Value	Multiplication and Division	Multiplication and Division		Fractions	
Year 6	Addition and Subtraction	Number and Place Value	Addition and Subtraction	Fractions and Percentages	Other Including SATs	Other
	Multiplication and Division	Geometry	Multiplication and Division			
			Shape, Space and Measure			

Mathematics

A EYFS Mathematics Educational Programme must involve activities and experiences for children as follows –

Developing a strong grounding in number is essential so that all children develop the necessary building blocks to excel mathematically. Children should be able to count confidently, develop a deep understanding of the numbers to 10, the relationships between them and the patterns within those numbers. By providing frequent and varied opportunities to build and apply this understanding - such as using manipulatives, including small pebbles and tens frames for organising counting - 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.

Early Learning Goal – **Number** -
Children at the expected level of development will: - Have a deep understanding of number to 10, including the composition of each number; Subitise (recognise quantities without counting) up to 5; 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.

Early Learning Goal - **Numerical Patterns** -
Children at the expected level of development will: - 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.

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.

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 most 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.

The National Curriculum for Mathematics reflects the importance of spoken language in pupils' development across the whole curriculum – cognitively, socially, and linguistically. The quality and variety of language that pupils hear and speak are key factors in developing their mathematical vocabulary and presenting a mathematical justification, argument, or proof. They must be assisted in making their thinking clear to themselves as well as others and teachers should ensure that pupils build secure foundations by using discussion to probe and remedy their misconceptions.

Key Stage 1 – Years 1 and 2 –

The principal focus of Mathematics teaching in Key Stage 1 is to ensure that pupils develop confidence and mental fluency with whole numbers, counting and place value. This should involve working with numerals, words and the four operations, including with practical resources, for example, concrete objects and measuring tools. At this stage, pupils should 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. Pupils should read and spell mathematical vocabulary, at a level consistent with their increasing word reading and spelling knowledge at key stage 1.

Lower Key Stage 2 – Years 3 and 4 –

The principal focus of Mathematics teaching in Lower Key Stage 2 is to ensure that pupils become increasingly fluent with whole numbers and the four 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. At this stage, pupils should 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. Pupils should read and spell mathematical vocabulary correctly and confidently, using their growing word reading knowledge and their knowledge of spelling.

Upper Key Stage 2 – Years 5 and 6 –

The principal focus of Mathematics teaching in Upper Key Stage 2 is to ensure that pupils 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. At this stage, pupils should 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 four operations, including long multiplication and division, and in working with fractions, decimals, and percentages. Pupils should read, spell, and pronounce mathematical vocabulary correctly.

Progression in Mathematics

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
	NUMBER AND PLACE VALUE - COUNTING					
	count to and across 100, forwards and backwards, beginning with 0 or 1, or from any given number.			Count backwards through zero to include negative numbers.	Interpret negative numbers in context, count forwards and backwards with positive and negative whole numbers, including through zero.	Use negative numbers in context and calculate intervals across zero.
	count, read and write numbers to 100 in numerals; count in multiples of twos, fives and tens.	Count in steps of 2, 3, and 5 from 0, and in tens from any number, forward or backward.	Count from 0 in multiples of 4, 8, 50 and 100.	Count in multiples of 6, 7, 9, 25 and 1 000.	Count forwards or backwards in steps of powers of 10 for any given number up to 1 000 000.	
	Given a number, identify one more and one less.		Find 10 or 100 more or less than a given number.	Find 1 000 more or less than a given number.		
	NUMBER AND PLACE VALUE - COMPARING NUMBERS					
	Use the language of - equal to, more than, less than (fewer), most, least.	Compare and order numbers from 0 up to 100; use <, > and = signs.	Compare and order numbers up to 1000.	Order and compare numbers beyond 1000.	Read, write, order and compare numbers to at least 1 000 000 and determine the value of each digit (appears also in Reading and Writing Numbers)	Read, write, order and compare numbers up to 10 000 000 and determine the value of each digit (appears also in Reading and Writing Numbers)
				Compare numbers with the same number of decimal places up to two decimal places (copied from Fractions)		
	NUMBER AND PLACE VALUE – IDENTIFYING, REPRESENTING & ESTIMATING NUMBERS					
	Identify and represent numbers using objects and pictorial representations including the number line.	Identify, represent and estimate numbers using different representations, including the number line.	Identify, represent and estimate numbers using different representations.	Identify, represent and estimate numbers using different representations.		
	NUMBER AND PLACE VALUE - READING AND WRITING NUMBERS (incl Roman Numerals)					

Read and write numbers from 1 to 20 in numerals and words.	Read and write numbers to at least 100 in numerals and in words.	Read and write numbers up to 1 000 in numerals and in words.	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.	Read, write, order and compare numbers to at least 1 000 000 and determine the value of each digit.	Read, write, order and compare numbers up to 10 000 000 and determine the value of each digit.
		Tell and write the time from an analogue clock, including using Roman numerals from I to XII, and 12-hour and 24-hour clocks.		Read Roman numerals to 1000 (M) and recognise years written in Roman numerals.	

NUMBER AND PLACE VALUE - UNDERSTANDING PLACE VALUE

	Recognise the place value of each digit in a two-digit number (tens, ones)	Recognise the place value of each digit in a three-digit number (hundreds, tens, ones)	Recognise the place value of each digit in a four-digit number (thousands, hundreds, tens, and ones)	Read, write, order and compare numbers to at least 1 000 000 and determine the value of each digit.	Read, write, order and compare numbers up to 10 000 000 and determine the value of each digit.
			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 units, tenths and hundredths.	Recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents.	Identify the value of each digit to three decimal places and multiply and divide numbers by 10, 100 and 1000 where the answers are up to three decimal places.

NUMBER AND PLACE VALUE – ROUNDING

			Round any number to the nearest 10, 100 or 1 000.	Round any number up to 1 000 000 to the nearest 10, 100, 1 000, 10 000 and 100 000.	Round any whole number to a required degree of accuracy.
			Round decimals with one decimal place to the nearest whole number.	Round decimals with two decimal places to the nearest whole number and to one decimal place.	Solve problems which require answers to be rounded to specified degrees of accuracy.

NUMBER AND PLACE VALUE – PROBLEM SOLVING

		Use place value and number facts to solve problems.	Solve number problems and practical problems involving these ideas.	Solve number and practical problems that involve all of the above and with increasingly large positive numbers.	Solve number problems and practical problems that involve all of the above.	Solve number and practical problems that involve all of the above.

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
	NUMBER: ADDITION AND SUBTRACTION – NUMBER BONDS					
	Represent and use number bonds and related subtraction facts within 20.	Recall and use addition and subtraction facts to 20 fluently and derive and use related facts up to 100.				
	NUMBER: ADDITION AND SUBTRACTION – MENTAL CALCULATIONS					
	Add and subtract one-digit and two-digit numbers to 20, including zero.	Add and subtract numbers using concrete objects, pictorial representations, and mentally, including: * a two-digit number and ones * a two-digit number and tens * two two-digit numbers adding three one-digit numbers.	Add and subtract numbers mentally, including: * a three-digit number and ones * a three-digit number and tens * a three-digit number and hundreds.		Add and subtract numbers mentally with increasingly large numbers.	Perform mental calculations, including with mixed operations and large numbers.
	Read, write and interpret mathematical statements involving	Show that addition of two numbers can be done in any order				Use their knowledge of the order of operations to carry

addition (+), subtraction (-) and equals (=) signs.	(commutative) and subtraction of one number from another cannot.				out calculations involving the four operations.

NUMBER: ADDITION AND SUBTRACTION – WRITTEN METHODS

Read, write and interpret mathematical statements involving addition (+), subtraction (-) and equals (=) signs.		Add and subtract numbers with up to three digits, using formal written methods of columnar addition and subtraction.	Add and subtract numbers with up to 4 digits using the formal written methods of columnar addition and subtraction where appropriate.		

NUMBER: ADDITION AND SUBTRACTION – INVERSE OPERATIONS, ESTIMATING AND CHECKING ANSWERS.

	Recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems.	Estimate the answer to a calculation and use inverse operations to check answers.	Estimate and use inverse operations to check answers to a calculation.	Use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy.	Use estimation to check answers to calculations and determine, in the context of a problem, levels of accuracy.

NUMBER: ADDITION AND SUBTRACTION – PROBLEM SOLVING.

Solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as 7 = □ - 9.	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.	Solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction.	Solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why.	Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why.	Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why.

		Solve simple problems in a practical context involving addition and subtraction of money of the same unit, including giving change.				Solve problems involving addition, subtraction, multiplication and division.

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
	**NUMBER: MULTIPLICATION AND DIVISION FACTS**					
	Count in multiples of twos, fives and tens.	Count in steps of 2, 3, and 5 from 0, and in tens from any number, forward or backward.	Count from 0 in multiples of 4, 8, 50 and 100.	Count in multiples of 6, 7, 9, 25 and 1000.	Count forwards or backwards in steps of powers of 10 for any given number up to 1 000 000.	
		Recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers.	Recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables.	Recall multiplication and division facts for multiplication tables up to 12 × 12.		
	**NUMBER: MULTIPLICATION AND DIVISION – MENTAL CALCULATIONS**					
			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 mental and progressing to formal written methods.	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.	Multiply and divide numbers mentally drawing upon known facts.	Perform mental calculations, including with mixed operations and large numbers.
		Show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot.		Recognise and use factor pairs and commutativity in mental calculations.	Multiply and divide whole numbers and those involving decimals by 10, 100 and 1000.	Associate a fraction with division and calculate decimal fraction equivalents (e.g. 0.375) for a simple fraction (e.g. $^3/_8$)
	**NUMBER: MULTIPLICATION AND DIVISION – WRITTEN CALCULATION**					

		Calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication (×), division (÷) and equals (=) signs.	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 mental and progressing to formal written methods.	Multiply two-digit and three-digit numbers by a one-digit number using formal written layout.	Multiply numbers up to 4 digits by a one- or two-digit number using a formal written method, including long multiplication for two-digit numbers.	Multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication.
					Divide numbers up to 4 digits by a one-digit number using the formal written method of short division and interpret remainders appropriately for the context.	Divide numbers up to 4-digits by a two-digit whole number using the formal written method of short division where appropriate for the context divide numbers up to 4 digits by a two-digit whole number using the formal written method of long division, and interpret remainders as whole number remainders, fractions, or by rounding, as appropriate for the context.
						Use written division methods in cases where the answer has up to two decimal places.

NUMBER: MULTIPLICATION & DIVISION – MULTIPLES, FACTORS, PRIMES, SQUARE & CUBE NUMBERS

				Recognise and use factor pairs and commutativity in mental calculations.	Identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers.	Identify common factors, common multiples and prime numbers.
					Know and use the vocabulary of prime numbers, prime factors and composite (non-prime) numbers.	Use common factors to simplify fractions; use common

					Establish whether a number up to 100 is prime and recall prime numbers up to 19.	multiples to express fractions in the same denomination.
					Recognise and use square numbers and cube numbers, and the notation for squared (^{2}) and cubed (^{3})	Calculate, estimate and compare volume of cubes and cuboids using standard units, including centimetre cubed (cm^3) and cubic metres (m^3), and extending to other units such as mm^3 and km^3
NUMBER: MULTIPLICATION & DIVISION - ORDER OF OPERATIONS						
						Use their knowledge of the order of operations to carry out calculations involving the four operations.
NUMBER: MULTIPLICATION AND DIVISION – INVERSE OPERATIONS, ESTIMATING & CHECKING ANSWERS						
		Estimate the answer to a calculation and use inverse operations to check answers.	Estimate and use inverse operations to check answers to a calculation.			use estimation to check answers to calculations and determine, in the context of a problem, levels of accuracy
NUMBER: MULTIPLICATION AND DIVISION – PROBLEM SOLVING						
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.	Solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts.	Solve problems, including missing number problems, involving multiplication and division, including positive integer scaling problems and correspondence problems in which objects are connected to objects.	Solve problems involving multiplying and adding, including using the distributive law to multiply two-digit numbers by one digit, integer scaling problems and harder correspondence problems.	Solve problems involving multiplication and division including using their knowledge of factors and multiples, squares, and cubes.		Solve problems involving addition, subtraction, multiplication, and division.
				Solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equal's sign.		

		Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
					Solve problems involving multiplication and division, including scaling by simple fractions and problems involving simple rates.	Solve problems involving similar shapes where the scale factor is known or can be found.	

		Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
		NUMBER: FRACTIONS – COUNTING IN FRACTIONAL STEPS					
			Pupils should count in fractions up to 10, starting from any number and using the1/2 and 2/4 equivalence on the number line (Non Statutory Guidance)	Count up and down in tenths.	Count up and down in hundredths.		
		NUMBER: FRACTIONS – RECOGNISING FRACTIONS					
		Recognise, find and name a half as one of two equal parts of an object, shape or quantity.	Recognise, find, name and write fractions $\frac{1}{3}$, $\frac{1}{4}$, $\frac{2}{4}$ and $\frac{3}{4}$ of a length, shape, set of objects or quantity.	Recognise, find and write fractions of a discrete set of objects: unit fractions and non-unit fractions with small denominators.	Recognise that hundredths arise when dividing an object by one hundred and dividing tenths by ten.	Recognise and use thousandths and relate them to tenths, hundredths, and decimal equivalents.	
		Recognise, find and name a quarter as one of four equal parts of an object, shape or quantity.		Recognise that tenths arise from dividing an object into 10 equal parts and in dividing one – digit numbers or quantities by 10.			
				Recognise and use fractions as numbers: unit fractions and non-unit fractions with small denominators.			

NUMBER: FRACTIONS – COMPARING FRACTIONS

		Compare and order unit fractions, and fractions with the same denominators.		Compare and order fractions whose denominators are all multiples of the same number.	Compare and order fractions, including fractions >1

NUMBER: FRACTIONS – COMPARING DECIMALS

			Compare numbers with the same number of decimal places up to two decimal places.	Read, write, order, and compare numbers with up to three decimal places.	Identify the value of each digit in numbers given to three decimal places.

NUMBER: FRACTIONS – ROUNDING INCLUDING DECIMALS

			Round decimals with one decimal place to the nearest whole number.	Round decimals with two decimal places to the nearest whole number and to one decimal place.	Solve problems which require answers to be rounded to specified degrees of accuracy.

NUMBER: FRACTIONS – EQUIVALENCE (INCLUDING FRACTIONS, DECIMALS & PERCENTAGES)

	Write simple fractions e.g. $\frac{1}{2}$ of 6 = 3 and recognise the equivalence of $\frac{2}{4}$ and $\frac{1}{2}$.	Recognise and show, using diagrams, equivalent fractions with small denominators.	Recognise and show, using diagrams, families of common equivalent fractions.	Identify, name, and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths.	Use common factors to simplify fractions; use common multiples to express fractions in the same denomination.
			Recognise and write decimal equivalents of any number of tenths or hundredth.	Read and write decimal numbers as fractions (e.g. 0.71 = $\frac{71}{100}$) Recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents.	Associate a fraction with division and calculate decimal fraction equivalents (e.g. 0.375) for a simple fraction (e.g. $\frac{3}{8}$)

			Recognise and write decimal equivalents to $\frac{1}{4}$; $\frac{1}{2}$; $\frac{3}{4}$	Recognise the per cent symbol (%) and understand that per cent relates to "number of parts per hundred", and write percentages as a fraction with denominator 100 as a decimal fraction.	Recall and use equivalences between simple fractions, decimals and percentages, including in different contexts.

NUMBER: FRCATIONS – ADDITION AND SUBTRACTION

		Add and subtract fractions with the same denominator within one whole (e.g. $\frac{5}{7} + \frac{1}{7} = \frac{6}{7}$)	Add and subtract fractions with the same denominator.	Add and subtract fractions with the same denominator and multiples of the same number.	Add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions.
				Recognise mixed numbers and improper fractions and convert from one form to the other and write mathematical statements > 1 as a mixed number (e.g. $\frac{2}{5} + \frac{4}{5} = \frac{6}{5} = 1\frac{1}{5}$)	

NUMBER:FRACTIONS – MULTIPLICATION & DIVISION

				Multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams.	Multiply simple pairs of proper fractions, writing the answer in its simplest form (e.g. $\frac{1}{4} \times \frac{1}{2} = \frac{1}{8}$)
					Multiply one-digit numbers with up to two decimal places by whole numbers. Divide proper fractions by whole numbers (e.g. $\frac{1}{3} \div 2 = \frac{1}{6}$)

NUMBER: FRACTIONS – MULTIPLICATION & DIVISION OF DECIMALS

					Multiply one-digit numbers with up to two decimal places by whole numbers.

			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.		*Multiply and divide numbers by 10, 100 and 1000 where the answers are up to three decimal places.*
					Identify the value of each digit to three decimal places and multiply and divide numbers by 10, 100 and 1000 where the answers are up to three decimal places.
					Associate a fraction with division and calculate decimal fraction equivalents (e.g. 0.375) for a simple fraction (e.g. $^3/_8$)
					Use written division methods in cases where the answer has up to two decimal places.
NUMBER: FRACTIONS – PROBLEM SOLVING				
			Solve problems that involve all of the above.	*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.*	*Solve problems involving numbers up to three decimal places.*	
				Solve simple measure and money problems involving fractions and decimals to two decimal places.	*Solve problems which require knowing percentage and decimal equivalents of $^1/_2$, $^1/_4$, $^1/_5$, $^2/_5$, $^4/_5$ and those with a denominator of a multiple of 10 or 25.*	

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
RATIO AND PROPORTION					

	Statements only appear in Year 6 but should be connected to previous learning, particularly fractions, multiplication & division.					
						Solve problems involving the relative sizes of two quantities where missing values can be found by using integer multiplication and division facts.
						Solve problems involving the calculation of percentages. For example, of measures, and such as 15% of 360 and the use of percentages for comparison.
						Solve problems involving similar shapes where the scale factor is known or can be found.
						Solve problems involving unequal sharing and grouping using knowledge of fractions and multiples.

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
	MEASUREMENT: COMPARING AND ESTIMATING					

Compare, describe, and solve practical problems for: * lengths and heights. For example - long/short, longer/shorter, tall/short, double/half. * mass/weightz. For example - heavy/light, heavier than, lighter than. * Capacity and volume. For example - full/empty, more than, less than, half, half full, quarter. * Time. For example -quicker, slower, earlier, later.	Compare and order lengths, mass, volume/capacity and record the results using >, < and =		Estimate, compare and calculate different measures, including money in pounds and pence.	Calculate and compare the area of squares and rectangles including using standard units, square centimetres (cm^2) and square metres (m^2) and estimate the area of irregular shapes. Estimate volume (e.g. using 1 cm^3 blocks to build cubes and cuboids) and capacity (e.g. using water)	Calculate, estimate and compare volume of cubes and cuboids using standard units, including centimetre cubed (cm^3) and cubic metres (m^3), and extending to other units such as mm^3 and km^3.
Sequence events in chronological order using language. For example - before and after, next, first, today, yesterday, tomorrow, morning, afternoon and evening.	Compare and sequence intervals of time.	Compare durations of events, for example to calculate the time taken by particular events or tasks.			
		Estimate and read time with increasing accuracy to the nearest minute; record and compare time in terms of seconds, minutes, hours and o'clock; use vocabulary such as a.m./p.m., morning, afternoon, noon, and midnight.			

MEASUREMENT: MEASURING AND CALCULATING

| Measure and begin to record the following:
 * **lengths and heights**
 * **mass/weight** | Choose and use appropriate standard units to estimate and measure **length/height** in any direction (m/cm); **mass** (kg/g); **temperature** (°C); **capacity** (litres/ml) to the | Measure, compare, add, and subtract **lengths** (m/cm/mm); **mass** (kg/g); **volume/capacity** (l/ml) | Estimate, compare and calculate **different measures,** including **money in pounds and pence.** | Use all four operations to solve problems involving measure (e.g. **length, mass, volume, money)** using decimal notation including scaling. | Solve problems involving the calculation and conversion of **units of measure**, using decimal notation up to three |

* capacity and volume * time (hours, minutes, seconds)	nearest appropriate unit, using rulers, scales, thermometers and measuring vessels.				decimal places where appropriate.
		Measure the **perimeter** of simple 2-D shapes.	Measure and calculate the **perimeter** of a rectilinear figure (including squares) in centimetres and metres.	Measure and calculate the **perimeter** of composite rectilinear shapes in centimetres and metres.	Recognise that shapes with the same areas can have different **perimeters** and vice versa.
Recognise and know the value of different denominations of **coins and notes**.	Recognise and use symbols for pounds (**£**) **and pence (p)**; combine amounts to make a particular value. Find different combinations of coins that equal the same amounts of money. **Solve simple problems** in a practical context involving addition and subtraction of money of the same unit, including giving change.	Add and subtract amounts of **money** to give change, using both £ and p in practical contexts.			
			Find the area of rectilinear shapes by counting squares.	Calculate and compare the area of squares and rectangles including using standard units, square centimetres (cm^2) and square metres (m^2) and estimate the area of irregular shapes. Recognise and use square numbers and cube numbers, and the notation for squared (^{2}) and cubed (^{3})	Calculate the area of parallelograms and triangles. 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

					Recognise when it is possible to use formulae for area and volume of shapes.

		MEASUREMENT: TELLING THE TIME			
Tell the time to the hour and half past the hour and draw the hands on a clock face to show these times.	Tell and write the time to five minutes, including quarter past/to the hour and draw the hands on a clock face to show these times.	Tell and write the time from an analogue clock, including using Roman numerals from I to XII, and 12-hour and 24-hour clocks.	Read, write, and convert time between analogue and digital 12 and 24-hour clocks.		
Recognise and use language relating to dates, including days of the week, weeks, months, and years.	Know the number of minutes in an hour and the number of hours in a day.	Estimate and read time with increasing accuracy to the nearest minute; record and compare time in terms of seconds, minutes, hours and o'clock; use vocabulary such as a.m./p.m., morning, afternoon, noon, and midnight.			
			Solve problems involving converting from hours to minutes; minutes to seconds; years to months; weeks to days.	Solve problems involving converting between units of time.	

		MEASUREMENT: CONVERTING			
	Know the number of minutes in an hour and the number of hours in a day.	Know the number of seconds in a minute and the number of days in each month, year and leap year.	Convert between different units of measure (e.g. kilometre to metre; hour to minute)	Convert between different units of metric measure (e.g. kilometre and metre; centimetre and metre; centimetre and millimetre; gram and kilogram; litre and millilitre)	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 decimal notation to up to three decimal places.
			Read, write and convert time between analogue and digital 12 and 24-hour clocks.	Solve problems involving converting between units of time.	Solve problems involving the calculation and conversion of units of measure, using decimal notation up to three decimal places where appropriate.

			Solve problems involving converting from hours to minutes; minutes to seconds; years to months; weeks to days.	*Understand and use equivalences between metric units and common imperial units such as inches, pounds, and pints.*	*Convert between miles and kilometres.*

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
	GEOMETRY: PROPERTIES OF SHAPES – IDENTIFYING SHAPES AND THEIR PROPERTIES					
	Recognise and name common 2-D and 3-D shapes, including: * *2-D shapes [e.g. rectangles (including squares), circles and triangles]* * *3-D shapes [e.g. cuboids (including cubes), pyramids and spheres].*	*Identify and describe the properties of 2-D shapes, including the number of sides and line symmetry in a vertical line.* *Identify and describe the properties of 3-D shapes, including the number of edges, vertices, and faces.* *Identify 2-D shapes on the surface of 3-D shapes. For example, a circle on a cylinder and a triangle on a pyramid.*		*Identify lines of symmetry in 2-D shapes presented in different orientations.*	*Identify 3-D shapes, including cubes and other cuboids, from 2-D representations.*	*Recognise, describe and build simple 3-D shapes, including making nets.* *Illustrate and name parts of circles, including radius, diameter and circumference and know that the diameter is twice the radius.*
	GEOMETRY: PROPERTIES OF SHAPES – DRAWING AND CONSTRUCTING					
			Draw 2-D shapes and make 3-D shapes using modelling materials; recognise 3-D shapes in different orientations and describe them.	*Complete a simple symmetric figure with respect to a specific line of symmetry.*	*Draw given angles, and measure them in degrees ($^\circ$)*	*Draw 2-D shapes using given dimensions and angles.*

					Recognise, describe and build simple 3-D shapes, including making nets.
			GEOMETRY: PROPERTIES OF SHAPES – COMPARING AND CLASSIFYING		
		Compare and sort common 2-D and 3-D shapes and everyday objects.		Compare and classify geometric shapes, including quadrilaterals and triangles, based on their properties and sizes.	Use the properties of rectangles to deduce related facts and find missing lengths and angles.	Compare and classify geometric shapes based on their properties and sizes and find unknown angles in any triangles, quadrilaterals, and regular polygons.
					Distinguish between regular and irregular polygons based on reasoning about equal sides and angles.	
			GEOMETRY: PROPERTIES OF SHAPES – ANGLES		
		Recognise angles as a property of shape or a description of a turn.		Know angles are measured in degrees: estimate and compare acute, obtuse and reflex angles.	
		Identify right angles, recognise that two right angles make a half-turn, three make three quarters of a turn and four a complete turn; identify whether angles are greater than or less than a right angle.	Identify acute and obtuse angles and compare and order angles up to two right angles by size.	Identify: * angles at a point and one whole turn (total 360°) * angles at a point on a straight line and ½ a turn (total 180°)	Recognise angles where they meet at a point, are on a straight line, or are vertically opposite, and find missing angles.

			Identify horizontal and vertical lines and pairs of perpendicular and parallel lines.		* *other multiples of 90°*	

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
	GEOMETRY: POSITION AND DIRECTION – POSITION, DIRECTION AND MOVEMENT					
	Describe position, direction and movement, including half, quarter and three-quarter turns.	*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 anti-clockwise)*		*Describe positions on a 2-D grid as coordinates in the first quadrant.*	*Identify, describe and represent the position of a shape following a reflection or translation, using the appropriate language, and know that the shape has not changed.*	*Describe positions on the full coordinate grid (all four quadrants)*
				Describe movements between positions as translations of a given unit to the left/right and up/down.		*Draw and translate simple shapes on the coordinate plane and reflect them in the axes.*
				Plot specified points and draw sides to complete a given polygon.		

GEOMETRY: POSITION AND DIRECTION - PATTERN					
	Order and arrange combinations of mathematical objects in patterns and sequences.				

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
			STATISTICS – INTERPRETING, CONSTRUCTING AND PRESENTING DATA			
		Interpret and construct simple pictograms, tally charts, block diagrams and simple tables.	Interpret and present data using bar charts, pictograms, and tables.	Interpret and present discrete and continuous data using appropriate graphical methods, including bar charts and time graphs.	Complete, read and interpret information in tables, including timetables.	Interpret and construct pie charts and line graphs and use these to solve problems.
		Ask and answer simple questions by counting the number of objects in each category and sorting the categories by quantity.				
		Ask and answer questions about totalling and comparing categorical data.				
		STATISTICS – SOLVING PROBLEMS				

			Solve one-step and two-step questions. For example, 'How many more?' and 'How many fewer?' using information presented in scaled bar charts and pictograms and tables.	Solve comparison, sum, and difference problems using information presented in bar charts, pictograms, tables and other graphs.	Solve comparison, sum, and difference problems using information presented in a line graph.	Calculate and interpret the mean as an average.

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
			ALGEBRA - EQUATIONS			
	Solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and **missing number problems** such as 7 = ☐ - 9	Recognise and use the inverse relationship between addition and subtraction and use this to check calculations and **missing number problems**.	Solve problems, *including **missing number** problems, using number facts, place value, and more complex addition and subtraction.* Solve problems, *including **missing number** problems, involving multiplication and division, including integer scaling.*		Use the properties of rectangles to deduce related facts and find **missing lengths and angles.**	Express missing number problems algebraically.
		Recall and use addition and subtraction facts to 20 fluently and derive and use related facts up to 100.				Find pairs of numbers that satisfy number sentences involving two unknowns.
	Represent and use number bonds and related subtraction facts within 20.					Enumerate all possibilities of combinations of two.
			ALGEBRA - FORMULAE			

			Perimeter can be expressed algebraically as 2(a + b) where a and b are the dimensions in the same unit.		Use simple formulae.
					*Recognise when it is possible to use **formulae** for area and volume of shapes*
ALGEBRA - SEQUENCES					
Sequence events in chronological order using language such as: before and after, next, first, today, yesterday, tomorrow, morning, afternoon and evening.	*Compare and sequence intervals of time.* *Order and arrange combinations of mathematical objects in patterns.*				Generate and describe linear number sequences.

All programmes of study statements are included, and some appear twice (*shown in italics.)*

This occurs where:

- The statement has central relevance to more than one subcategory within a topic.

- The statement has central relevance to more than one mathematics topic.

This is done to reflect the aims of the curriculum that *pupils should make rich connections across mathematical ideas to develop fluency, mathematical reasoning, and competence in solving increasingly sophisticated problems* (Mathematics programmes of study: key stages 1 and 2 page 3).