

Maths Progression of Skills and Knowledge

	Gold	Violet	Indigo	Blue	Green	Yellow	Orange	Red	Pink
Counting	<p>Pupils should be given opportunity to/ Pupils should be taught to: insert pegs into a peg board -match sequence or patterns of blocks or beads -use some number names and number language in play -say some counting words -recite numbers in order to 10. - know that numbers identify how many objects are in a set. -realise not only objects but anything can be counted. -compare two groups of objects, saying when they have the same number -show curiosity about numbers by offering comments or asking questions select a small number of objects from a group, when asked for one more, or please give me two.</p>	<p>- Pupils should be given opportunity to/ Pupils should be taught to: count objects by saying one number name for each item (1-20) -count objects or actions which cannot be moved -count objects to 10 and beginning to count objects beyond 10. count an irregular arrangement of up to ten objects estimate how many objects they can see and check by counting them find the total number of items in two groups by counting all of them -count reliably with numbers from 1-20 and place them in order</p>	<p>Pupils should be given opportunity to/ Pupils should be taught to: • count to and across 100, forwards and backwards, beginning with 0 or 1, or from any given number •count, read and write numbers to 100 in numerals; count in multiples of twos, fives and tens</p>	<p>Pupils should be given opportunity to/ Pupils should be taught to: •count in steps of 2, 3, and 5 from 0, and in tens from any number, forward and backward</p>	<p>Pupils should be given opportunity to/ Pupils should be taught to: •count from 0 in multiples of 4, 8, 50 and 100; find 10 or 100 more or less than a given number.</p>	<p>Pupils should be given opportunity to/ Pupils should be taught to: •count in multiples of 6, 7, 9, 25 and 1000 •find 1000 more or less than a given number count backwards through zero to include negative numbers</p>	<p>Pupils should be given opportunity to/ Pupils should be taught to: •count forwards or backwards in steps of powers of 10 for any given number up to 1 000 000 •interpret negative numbers in context, count forwards and backwards with positive and negative whole numbers, including through zero</p>	<p>Pupils should be given opportunity to/ Pupils should be taught to: •use negative numbers in context, and calculate intervals across zero</p>	<p>Pupils should be given opportunity to/ Pupils should be taught to: order positive and negative integers appreciate the infinite nature of the sets of integers, real and rational numbers.</p>
Place Value				<p>Pupils should be given opportunity to/ Pupils should be taught to: recognise the place value of each digit in a two-digit number •compare and order numbers from 0 up to 100; use <, > and = signs</p>	<p>Pupils should be given opportunity to/ Pupils should be taught to: •recognise the place value of each digit in a three-digit number •compare and order numbers up to 1000</p>	<p>Pupils should be given opportunity to/ Pupils should be taught to: •recognise the place value of each digit in a four-digit number •order and compare numbers beyond 1000 •round any number to the nearest 10, 100 or 1000</p>	<p>Pupils should be given opportunity to/ Pupils should be taught to: •read, write, order and compare numbers up to 1 000 000 and determine the value of each digit •round any number up to 1 000 000 to the nearest 10, 100, 1000, 10 000 and 100 000</p>	<p>Pupils should be given opportunity to/ Pupils should be taught to: •read, write, order and compare numbers up to 10 000 000 and determine the value of each digit •round any whole number to a required degree of accuracy</p>	<p>Pupils should be given opportunity to/ Pupils should be taught to: understand and use place value for decimals, measures and integers of any size order positive and negative integers, decimals and fractions; use a number line as a model for ordering real numbers, use symbols =, ≠, <, >, ≤, ≥ round numbers and measures to an appropriate degree of accuracy [for example, to a number of decimal places or significant figures]</p>
Representing number	<p>Pupils should be given opportunity to/ Pupils should be taught to: - begin to represent numbers using numbers, marks on paper or pictures. -copy and draw simple shapes and symbols pictures (letters or numbers) that incorporate crossing and joining lines -match numeral and quantity correctly -show/develop an interest in numerals in the environment -show/develop an interest in representing numerals -create and experiment with symbols and marks representing ideas of number</p>	<p>Pupils should be given opportunity to/ Pupils should be taught to: -recognise some numerals of personal significance e.g. house number or family member's age - recognise numerals 1 to 5 -select the correct numeral to represent 1 to 5, then 1-10 objects record using marks that they can interpret and explain</p>	<p>Pupils should be given opportunity to/ Pupils should be taught to: read and write numbers from 1 to 20 in numerals (and words) •identify and represent numbers using objects and pictorial representations including the number line and tally marks use language of: equal to, more than, less than (fewer), most, least •read, write and interpret mathematical statements involving addition (+), subtraction (-) and equals (=) signs</p>	<p>Pupils should be given opportunity to/ Pupils should be taught to: •identify, represent and estimate numbers using different representations, including the number line •read and write numbers to at least 100 in numerals (and in words)</p>	<p>Pupils should be given opportunity to/ Pupils should be taught to: •identify, represent and estimate numbers using different representations •read and write numbers up to 1000 in numerals (and in words)</p>	<p>Pupils should be given opportunity to/ Pupils should be taught to: •identify, represent and estimate numbers using different representations •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</p>	<p>Pupils should be given opportunity to/ Pupils should be taught to: •(read Roman numerals to 1000 (M) and recognise years written in Roman numerals) •recognise and use square numbers and cube numbers, and the notation for squared (2) and cubed (3)</p>		<p>Pupils should be given opportunity to/ Pupils should be taught to: use integer powers and associated real roots (square, cube and higher), recognise powers of 2, 3, 4, 5 and distinguish between exact representations of roots and their decimal approximations interpret and compare numbers in standard form $A \times 10^n$ $1 \leq A < 10$, where n is a positive or negative integer or zero use approximation through rounding to estimate answers and calculate possible resulting errors expressed using inequality notation $a < x \leq b$</p>

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Number facts (+/-)	Pupils should be given opportunity to/ Pupils should be taught to: -separate a group of three or four objects in different ways beginning to recognise that the total is still the same. - that a group of things changes in quantity when something is added or taken away. use some language of quantities such as more or a lot	Pupils should be given opportunity to/ Pupils should be taught to: use the language of more and fewer to compare two sets of objects -say the number that is one more than a given number -use quantities and objects to add and subtract two single digit numbers and count on or back to find the answer	Pupils should be given opportunity to/ Pupils should be taught to: •when given a number, identify one more and one less •to represent and use number bonds and related subtraction facts within 20	Pupils should be given opportunity to/ Pupils should be taught to: •use place value and number facts to solve problems recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100		Pupils should be given opportunity to/ Pupils should be taught to: find 1000 more or less than a given number			
Mental +/-			Pupils should be given opportunity to/ Pupils should be taught to: •add and subtract one-digit and two-digit numbers to 20, including zero	Pupils should be given opportunity to/ Pupils should be taught to: •add and subtract numbers using concrete objects, pictorial representations, and mentally, including: TU+U, TU+T, TU+TU and U+U+U •show that addition of two numbers can be done in any order (commutative) and subtraction of one number from another cannot	Pupils should be given opportunity to/ Pupils should be taught to: •add and subtract numbers mentally, including: HTU+U, HTU+T and HTU+H		Pupils should be given opportunity to/ Pupils should be taught to: •add and subtract numbers mentally with increasingly large numbers	Pupils should be given opportunity to/ Pupils should be taught to: •perform mental calculations, including with mixed operations and large numbers	Pupils should be given opportunity to/ Pupils should be taught to: recognise and use relationships between operations including inverse operations
Written +/-			Pupils should be given opportunity to/ Pupils should be taught to: represent number facts using simple number sentences for one digit and two digit numbers alongside concrete and/or pictorial representations.	Pupils should be given opportunity to/ Pupils should be taught to: represent number facts for numbers to 100 using simple number sentences for one digit and two digit numbers alongside pictorial representation.	Pupils should be given opportunity to/ Pupils should be taught to: •add and subtract numbers with up to three digits, using formal written methods of columnar addition and subtraction	Pupils should be given opportunity to/ Pupils should be taught to: •add and subtract numbers with up to 4 digits using the formal written methods of columnar addition and subtraction where appropriate	Pupils should be given opportunity to/ Pupils should be taught to: •add and subtract whole numbers with more than 4 digits, including using formal written methods		Pupils should be given opportunity to/ Pupils should be taught to: use the four operations, including formal written methods, applied to integers, decimals, proper and improper fractions, and mixed numbers, all both positive and negative use conventional notation for the priority of operations, including brackets, powers, roots and reciprocals recognise and use relationships between operations including inverse operations
Problems +/-	Pupils should be given opportunity to/ Pupils should be taught to: - explore number problems	Pupils should be given opportunity to/ Pupils should be taught to: -in practical activities and discussion, begin to use the vocabulary involved in adding and subtracting. -begin to identify own mathematical problems based on own interests and fascinations.	Pupils should be given opportunity to/ Pupils should be taught to: •solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as $7 = \square - 9$.	Pupils should be given opportunity to/ Pupils should be taught to: •solve problems with addition and subtraction, using concrete, pictorial and abstract representations •recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems.	Pupils should be given opportunity to/ Pupils should be taught to: •estimate the answer to a calculation and use inverse operations to check answers •solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction	Pupils should be given opportunity to/ Pupils should be taught to: •estimate and use inverse operations to check answers to a calculation •solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why	Pupils should be given opportunity to/ Pupils should be taught to: •use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy •solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why		Pupils should be given opportunity to/ Pupils should be taught to: use a calculator and other technologies to calculate results accurately and then interpret them appropriately

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Number facts (x/÷)		<p>Pupils should be given opportunity to/ Pupils should be taught to:</p> <p>-Solve problems including doubling, halving and sharing</p>		<p>Pupils should be given opportunity to/ Pupils should be taught to:</p> <ul style="list-style-type: none"> •recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers 	<p>Pupils should be given opportunity to/ Pupils should be taught to:</p> <ul style="list-style-type: none"> •recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables 		<p>Pupils should be given opportunity to/ Pupils should be taught to:</p> <ul style="list-style-type: none"> •recall multiplication and division facts for multiplication tables up to 12×12 	<p>Pupils should be given opportunity to/ Pupils should be taught to:</p> <ul style="list-style-type: none"> •identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers •know and use the vocabulary of prime numbers, prime factors and composite (non-prime) numbers •establish whether a number up to 100 is prime and recall prime numbers up to 19 	<p>Pupils should be given opportunity to/ Pupils should be taught to:</p> <ul style="list-style-type: none"> •identify common factors, common multiples and prime numbers 	<p>Pupils should be given opportunity to/ Pupils should be taught to:</p> <p>use the concepts and vocabulary of prime numbers, factors (or divisors), multiples, common factors, common multiples, highest common factor, lowest common multiple, prime factorisation, including using product notation and the unique factorisation property</p>
Mental (x/÷)				<p>Pupils should be given opportunity to/ Pupils should be taught to:</p> <ul style="list-style-type: none"> •calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication (x), division (÷) and equals (=) signs •show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot 	<p>Pupils should be given opportunity to/ Pupils should be taught to:</p> <ul style="list-style-type: none"> •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 methods 	<p>Pupils should be given opportunity to/ Pupils should be taught to:</p> <ul style="list-style-type: none"> •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 •recognise and use factor pairs and commutativity in mental calculations 	<p>Pupils should be given opportunity to/ Pupils should be taught to:</p> <ul style="list-style-type: none"> •multiply and divide numbers mentally drawing upon known facts •multiply and divide whole numbers and those involving decimals by 10, 100 and 1000 	<p>Pupils should be given opportunity to/ Pupils should be taught to:</p> <ul style="list-style-type: none"> •perform mental calculations, including with mixed operations and large numbers 	<p>Pupils should be given opportunity to/ Pupils should be taught to:</p> <p>recognise and use relationships between operations including inverse operations</p>	
Written (x/÷)			<p>Pupils should be given opportunity to/ Pupils should be taught to:</p> <p>represent number facts using simple number sentences for multiples of number 1-10, alongside concrete and/or pictorial representations including arrays.</p>	<p>Pupils should be given opportunity to/ Pupils should be taught to:</p> <p>represent number facts using simple number sentences for multiples of number 1-10, pictorial representations including arrays.</p>	<p>Pupils should be given opportunity to/ Pupils should be taught to:</p> <ul style="list-style-type: none"> •progress to formal written methods calculations as above 	<p>Pupils should be given opportunity to/ Pupils should be taught to:</p> <ul style="list-style-type: none"> •multiply two-digit and three-digit numbers by a one-digit number using formal written layout 	<p>Pupils should be given opportunity to/ Pupils should be taught to:</p> <ul style="list-style-type: none"> •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 •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 	<p>Pupils should be given opportunity to/ Pupils should be taught to:</p> <ul style="list-style-type: none"> •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 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 •divide numbers up to 4 digits by a two-digit number using the formal written method of short division where appropriate, interpreting remainders according to context 	<p>Pupils should be given opportunity to/ Pupils should be taught to:</p> <p>use the four operations, including formal written methods, applied to integers, decimals, proper and improper fractions, and mixed numbers, all both positive and negative</p> <p>use conventional notation for the priority of operations, including brackets, powers, roots and reciprocals</p> <p>recognise and use relationships between operations including inverse operations</p>	

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Problems (x/÷)		<p>Pupils should be given opportunity to/ Pupils should be taught to:</p> <p>explore problems including doubling, halving and sharing</p>	<p>Pupils should be given opportunity to/ Pupils should be taught to:</p> <ul style="list-style-type: none"> •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. 	<p>Pupils should be given opportunity to/ Pupils should be taught to:</p> <ul style="list-style-type: none"> •solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts 	<p>Pupils should be given opportunity to/ Pupils should be taught to:</p> <ul style="list-style-type: none"> •solve problems, including missing number problems, involving multiplication and division, including positive integer scaling problems and correspondence problems in which n objects are connected to m objects. 	<p>Pupils should be given opportunity to/ Pupils should be taught to:</p> <ul style="list-style-type: none"> •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 such as n objects are connected to m objects 	<p>Pupils should be given opportunity to/ Pupils should be taught to:</p> <ul style="list-style-type: none"> •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 and a combination of these, including understanding the meaning of the equals sign •solve problems involving multiplication and division, including scaling by simple fractions and problems involving simple rates 	<p>Pupils should be given opportunity to/ Pupils should be taught to:</p> <ul style="list-style-type: none"> •use their knowledge of the order of operations to carry out calculations (+x ÷) •solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why •solve problems involving addition, subtraction, multiplication and division •use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy 	<p>Pupils should be given opportunity to/ Pupils should be taught to:</p> <ul style="list-style-type: none"> use a calculator and other technologies to calculate results accurately and then interpret them appropriately use compound units such as speed, unit pricing and density to solve problems.
Fractions			<p>Pupils should be given opportunity to/ Pupils should be taught to:</p> <ul style="list-style-type: none"> •recognise, find and name a half as one of two equal parts of an object, shape or quantity •recognise, find and name a quarter as one of four equal parts of an object, shape or quantity. 	<p>Pupils should be given opportunity to/ Pupils should be taught to:</p> <ul style="list-style-type: none"> •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 write simple fractions for example, $\frac{1}{2}$ of 6 = 3 and recognise the equivalence of $\frac{2}{4}$ and $\frac{1}{2}$. 	<p>Pupils should be given opportunity to/ Pupils should be taught to:</p> <ul style="list-style-type: none"> •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 10 •compare and order unit fractions, and fractions with the same denominators •recognise and show, using diagrams, equivalent fractions with small denominators •recognise, find and write fractions of a discrete set of objects: unit fractions and non-unit fractions with small denominators •recognise and use fractions as numbers: unit fractions and non-unit fractions with small denominators •add and subtract fractions with the same denominator within one whole [for example, $\frac{5}{7} + \frac{1}{7} = \frac{6}{7}$] •solve problems using all fraction knowledge •solve problems using all fraction knowledge 	<p>Pupils should be given opportunity to/ Pupils should be taught to:</p> <ul style="list-style-type: none"> •count up and down in hundredths; •recognise that hundredths arise when dividing an object by one hundred and dividing tenths by ten. •recognise and show, using diagrams, families of common equivalent fractions •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 •add and subtract fractions with the same denominator •solve simple measure and money problems involving fractions and decimals to two decimal places 	<p>Pupils should be given opportunity to/ Pupils should be taught to:</p> <ul style="list-style-type: none"> •recognise mixed numbers and improper fractions and convert from one form to the other and write mathematical statements > 1 as a mixed number •compare and order fractions whose denominators are all multiples of the same number •identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths •add and subtract fractions with the same denominator and denominators that are multiples of the same number •multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams •solve problems involving number up to three decimal places •solve problems which require knowing percentage and decimal equivalents of $\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{5}$, $\frac{2}{5}$, $\frac{4}{5}$ and those fractions with a denominator of a multiple of 10 or 25 	<p>Pupils should be given opportunity to/ Pupils should be taught to:</p> <ul style="list-style-type: none"> •use common factors to simplify fractions •use common multiples to express fractions in the same denomination •compare and order fractions, including fractions > 1 •add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions •multiply simple pairs of proper fractions, writing the answer in its simplest form •divide proper fractions by whole numbers •solve problems which require answers to be rounded to specified degrees of accuracy •recall and use equivalences between simple fractions, decimals and percentages, including in different contexts. 	<p>Pupils should be given opportunity to/ Pupils should be taught to:</p> <ul style="list-style-type: none"> interpret fractions and percentages as operators express one quantity as a fraction of another, where the fraction is less than 1 and greater than 1 use the four operations, including formal written methods, applied to integers, decimals, proper and improper fractions, and mixed numbers, all both positive and negative

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Decimals						<p>Pupils should be given opportunity to/ Pupils should be taught to:</p> <ul style="list-style-type: none"> •recognise and write decimal equivalents of any number of tenths or hundredths •recognise and write decimal equivalents to $\frac{1}{4}$, $\frac{1}{2}$ and $\frac{3}{4}$ •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 •round decimals with one decimal place to the nearest whole number •compare numbers with the same number of decimal places up to two decimal places <p>solve simple measure and money problems involving fractions and decimals to two decimal places</p>	<p>Pupils should be given opportunity to/ Pupils should be taught to:</p> <ul style="list-style-type: none"> •read and write decimal numbers as fractions •recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents •round decimals with two decimal places to the nearest whole number and to one decimal place •read, write, order and compare numbers with up to three decimal places 	<p>Pupils should be given opportunity to/ Pupils should be taught to:</p> <ul style="list-style-type: none"> •associate a fraction with division and calculate decimal fraction equivalents [for example, 0.375] for a simple fraction •identify the value of each digit in numbers given to three decimal places •multiply and divide numbers by 10, 100 and 1000 giving answers up to three decimal places •multiply one-digit number with up to two decimal places by whole numbers •use written division methods in cases where the answer has up to two decimal places 	<p>Pupils should be given opportunity to/ Pupils should be taught to:</p> <p>work interchangeably with terminating decimals and their corresponding fractions (such as 3.5 and $\frac{7}{2}$ or 0.375 and $\frac{3}{8}$)</p> <p>use standard units of mass, length, time, money and other measures, including with decimal quantities</p> <p>Understand and use place value for decimals, measures and integers of any size</p> <p>Order positive and negative integers, decimals and fractions;</p> <p>use the four operations, including formal written methods, applied to integers, decimals, proper and improper fractions, and mixed numbers, all both positive and negative</p> <p>use conventional notation for the priority of operations, including brackets, powers, roots and reciprocals</p>
Percentages							<p>Pupils should be given opportunity to/ Pupils should be taught to:</p> <ul style="list-style-type: none"> •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, and as a decimal 	<p>Pupils should be given opportunity to/ Pupils should be taught to:</p> <ul style="list-style-type: none"> •solve problems involving the calculation of percentages [for example, of measures, and such as 15% of 360] and the use of percentages for comparison 	<p>Pupils should be given opportunity to/ Pupils should be taught to:</p> <p>define percentage as 'number of parts per hundred', interpret percentages and percentage changes as a fraction or a decimal, interpret these multiplicatively, express one quantity as a percentage of another, compare two quantities using percentages, and work with percentages greater than 100%</p> <p>interpret fractions and percentages as operators</p> <p>solve problems involving percentage change, including: percentage increase, decrease and original value problems and simple interest in financial mathematics</p>

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Measures	<p>Pupils should be given opportunity to/ Pupils should be taught to:</p> <p>enjoy filling and empty containers</p> <p>understand concepts of heavy and light, long or short by using the words correctly, recognise big and small things in context</p>	<p>Pupils should be given opportunity to/ Pupils should be taught to:</p> <p>orders two or three items by length or height</p> <p>order two or three objects by weight or capacity</p> <p>use the language associated with capacity - full, empty, nearly full etc..</p>	<p>Pupils should be given opportunity to/ Pupils should be taught to:</p> <p>•compare, describe and solve practical problems for: length/height, weight/mass, capacity/volume & time</p> <p>•measure and begin to record length/height, weight/mass, capacity/volume & time</p>	<p>Pupils should be given opportunity to/ Pupils should be taught to:</p> <p>•choose and use appropriate standard units to estimate and measure length/height (m/cm); mass (kg/g); temperature (°C); capacity (litres/ml) to the nearest appropriate unit, using rulers, scales, thermometers and measuring vessels</p> <p>•compare and order lengths, mass, volume/capacity and record the results using >, < and =</p>	<p>Pupils should be given opportunity to/ Pupils should be taught to:</p> <p>•measure, compare, add and subtract: lengths (m/cm/mm); mass (kg/g); volume/capacity (l/ml)</p>	<p>Pupils should be given opportunity to/ Pupils should be taught to:</p> <p>•Convert between different units of measure estimate, compare and calculate different measures, including money in pounds and pence</p>	<p>Pupils should be given opportunity to/ Pupils should be taught to:</p> <p>•convert between different units of metric measure</p> <p>•understand and use approximate equivalences between metric units and common imperial units such as inches, pounds and pints</p> <p>•estimate volume and capacity</p>	<p>Pupils should be given opportunity to/ Pupils should be taught to:</p> <p>•solve problems involving the calculation and conversion of units of measure, using decimal notation up to three decimal places where appropriate</p> <p>•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</p> <p>convert between miles and kilometres</p>	<p>Pupils should be given opportunity to/ Pupils should be taught to:</p> <p>use standard units of mass, length, time, money and other measures, including with decimal quantities</p> <p>round numbers and measures to an appropriate degree of accuracy [for example, to a number of decimal places or significant figures]</p> <p>change freely between related standard units [for example time, length, area, volume/capacity, mass]</p>
Mensuration					<p>Pupils should be given opportunity to/ Pupils should be taught to:</p> <p>•measure the perimeter of simple 2-D shapes</p>	<p>Pupils should be given opportunity to/ Pupils should be taught to:</p> <p>•measure and calculate the perimeter of a rectilinear figure (including squares) in centimetres and metres</p> <p>find the area of rectilinear shapes by counting squares</p>	<p>Pupils should be given opportunity to/ Pupils should be taught to:</p> <p>•measure and calculate the perimeter of composite rectilinear shapes in centimetres and metres</p> <p>•calculate and compare the area of rectangles (including squares), and including using standard units, square centimetres (cm²) and square metres (m²) and estimate the area of irregular shapes</p>	<p>Pupils should be given opportunity to/ Pupils should be taught to:</p> <p>•recognise that shapes with the same areas can have different perimeters and vice versa</p> <p>•recognise when it is possible to use formulae for area and volume of shapes</p> <p>•calculate the area of parallelograms and triangles</p> <p>•calculate, estimate and compare volume of cubes and cuboids using standard units, including cubic centimetres (cm³) and cubic metres (m³), and extending to other units.</p>	<p>Pupils should be given opportunity to/ Pupils should be taught to:</p> <p>-derive and apply formulae to calculate and solve problems involving: perimeter and area of triangles, parallelograms, trapezia, volume of cuboids (including cubes) and other prisms (including cylinders)</p> <p>calculate and solve problems involving: perimeters of 2-D shapes (including circles), areas of circles and composite shapes</p> <p>draw and measure line segments and angles in geometric figures, including interpreting scale drawings</p>
Money		<p>Pupils should be given opportunity to/ Pupils should be taught to:</p> <p>Begin to use everyday language related to money</p> <p>demonstrate the concept money is used as an exchange for items</p>	<p>Pupils should be given opportunity to/ Pupils should be taught to:</p> <p>•recognise and know the value of different denominations of coins and notes</p> <p>demonstrate an understanding of the value of different items/ what money is worth</p>	<p>Pupils should be given opportunity to/ Pupils should be taught to:</p> <p>•recognise and use symbols for pounds (£) and pence (p); combine amounts to make a particular value</p> <p>•find different combinations of coins that equal the same amounts of money</p> <p>•solve simple problems in a practical context involving addition and subtraction of money of the same unit, including giving change</p>	<p>Pupils should be given opportunity to/ Pupils should be taught to:</p> <p>•add and subtract amounts of money to give change, using both £ and p in practical contexts</p>		<p>Pupils should be given opportunity to/ Pupils should be taught to:</p> <p>•use all four operations to solve problems involving measure [for example, length, mass, volume, money] using decimal notation, including scaling</p>		

	Gold	Violet	Indigo	Blue	Green	Yellow	Orange	Red	Pink
Time	<p>Pupils should be given opportunity to/ Pupils should be taught to:</p> <p>get to know and enjoy daily routines e.g. getting up, bath time, meal times associate a sequence of actions with daily routine beginning to understand things may happen now. understand some talk about immediate past or future e.g. before later or soon anticipate/experience and become accustomed specific time based events such as meal times or home time. enjoy anticipation in games e.g. ready steady go, recognise and anticipate daily routines carry out a sequence of instructions</p>	<p>Pupils should be given opportunity to/ Pupils should be taught to:</p> <p>use everyday language related to time orders and sequence familiar events measure short periods of time in simple ways</p>	<p>Pupils should be given opportunity to/ Pupils should be taught to:</p> <ul style="list-style-type: none"> •sequence events in chronological order using language recognise and use language relating to dates, including days of the week, weeks, months and years •tell the time to the hour and half past the hour and draw the hands on a clock face to show these times 	<p>Pupils should be given opportunity to/ Pupils should be taught to:</p> <ul style="list-style-type: none"> •compare and sequence intervals of time •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 •know the number of minutes in an hour and the number of hours in a day 	<p>Pupils should be given opportunity to/ Pupils should be taught to:</p> <ul style="list-style-type: none"> •tell and write the time from an analogue clock, (including using Roman numerals from I to XII), and 12-hour and 24-hour clocks •estimate and read time with increasing accuracy to the nearest minute; record and compare time in terms of seconds, minutes and hours; use vocabulary such as o'clock, a.m./p.m., morning, afternoon, noon and midnight •know the number of seconds in a minute and the number of days in each month, year and leap year compare durations of events 	<p>Pupils should be given opportunity to/ Pupils should be taught to:</p> <ul style="list-style-type: none"> •convert between different units of measure (e.g. Hours to minutes) •read, write and convert time between analogue and digital 12- and 24-hour clocks •solve problems involving converting from hours to minutes; minutes to seconds; years to months; weeks to days 	<p>Pupils should be given opportunity to/ Pupils should be taught to:</p> <ul style="list-style-type: none"> •solve problems involving converting between units of time 		
Position & Direction	<p>Pupils should be given opportunity to/ Pupils should be taught to:</p> <p>Use positional language follow 3 part instructions such as put the block on the box show an understanding of prepositions such as in front, behind, next to with support of real items.</p>	<p>Pupils should be given opportunity to/ Pupils should be taught to:</p> <p>Use everyday language to compare position describe their relative position such as behind, or next to</p>	<p>Pupils should be given opportunity to/ Pupils should be taught to:</p> <ul style="list-style-type: none"> •describe position, direction and movement, including whole, half, quarter and three-quarter turns. 	<p>Pupils should be given opportunity to/ Pupils should be taught to:</p> <ul style="list-style-type: none"> •order and arrange combinations of mathematical objects in patterns and sequences. •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 3/4 turns 		<p>Pupils should be given opportunity to/ Pupils should be taught to:</p> <ul style="list-style-type: none"> •describe positions on a 2-D grid as coordinates in the first quadrant •describe movements between positions as translations of a given unit to the left/right and up/down •plot specified points and draw sides to complete a given polygon 	<p>Pupils should be given opportunity to/ Pupils should be taught to:</p> <ul style="list-style-type: none"> •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 	<p>Pupils should be given opportunity to/ Pupils should be taught to:</p> <ul style="list-style-type: none"> •describe positions on the full coordinate grid (all four quadrants) •draw and translate simple shapes on the coordinate plane, and reflect them in the axes. 	<p>Pupils should be given opportunity to/ Pupils should be taught to:</p> <ul style="list-style-type: none"> use scale factors, scale diagrams and maps ▪ identify and construct congruent triangles, and construct similar shapes by enlargement, with and without coordinate grids
Shape vocabulary	<p>Pupils should be given opportunity to/ Pupils should be taught to:</p> <p>recognise big and small things in context, understand and use descriptive words e.g. big begin to categorise objects according to properties such as shape or size begin to use language of size and shape notice simple shapes and patterns in pictures -show awareness of similarity of shapes in the environment use shapes appropriately for tasks begin to talk about/identify the shape of everyday objects, e.g. round /tall</p>	<p>Pupils should be given opportunity to/ Pupils should be taught to:</p> <ul style="list-style-type: none"> -begin to use mathematical names for solid 3D shapes and flat 2D shapes and mathematical terms to describe shapes -selects a particular named shape 	<p>Pupils should be given opportunity to/ Pupils should be taught to:</p> <ul style="list-style-type: none"> •recognise and name common 2-D shapes (e.g. Square, circle, triangle) •recognise and name common 3-D shapes (e.g. Cubes, cuboids, pyramids & spheres) 	<p>Pupils should be given opportunity to/ Pupils should be taught to:</p> <p>Identify, and label vertices, edges, faces, symmetry</p>	<p>Pupils should be given opportunity to/ Pupils should be taught to:</p> <ul style="list-style-type: none"> •identify horizontal and vertical lines and pairs of perpendicular and parallel lines 		<p>Pupils should be given opportunity to/ Pupils should be taught to:</p> <ul style="list-style-type: none"> •illustrate and name parts of circles, including radius, diameter and circumference and know that the diameter is twice the radius 	<p>Pupils should be given opportunity to/ Pupils should be taught to:</p> <ul style="list-style-type: none"> use the standard conventions for labelling the sides and angles of triangle ABC, and know and use the criteria for congruence of triangles 	

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Properties of 2-d shape	<p>Pupils should be given opportunity to/ Pupils should be taught to:</p> <ul style="list-style-type: none"> -attempt to fit shapes into spaces e.g. shape sorters or inset boards insert shapes into simple posting box or shape board, or into a container make marks including circles, lines and dots join 2 interlocking pieces from a large puzzle copy simple shapes and symbols pictures (letters or numbers) that incorporate crossing and joining lines (circle square and cross) 	<p>Pupils should be given opportunity to/ Pupils should be taught to:</p> <ul style="list-style-type: none"> use familiar objects and common shapes to create and recreate patterns and build models explore characteristics of everyday objects and shapes and use mathematical language to describe them. 		<p>Pupils should be given opportunity to/ Pupils should be taught to:</p> <ul style="list-style-type: none"> •identify and describe the properties of 2-D shapes, including the number of sides and line symmetry in a vertical line. •compare and sort common 2-D and 3-D shapes and everyday objects. 	<p>Pupils should be given opportunity to/ Pupils should be taught to:</p> <ul style="list-style-type: none"> •draw 2-D shapes 	<p>Pupils should be given opportunity to/ Pupils should be taught to:</p> <ul style="list-style-type: none"> •compare and classify geometric shapes, including quadrilaterals and triangles, based on properties and sizes •identify lines of symmetry in 2-D shapes presented in different orientations •complete a simple symmetric figure with respect to a specific line of symmetry. 	<p>Pupils should be given opportunity to/ Pupils should be taught to:</p> <ul style="list-style-type: none"> •use the properties of rectangles to deduce related facts and find missing lengths and angles •distinguish between regular and irregular polygons based on reasoning about equal sides and angles. 	<p>Pupils should be given opportunity to/ Pupils should be taught to:</p> <ul style="list-style-type: none"> •draw 2-D shapes using given dimensions and angles compare and classify geometric shapes based on their properties and sizes 	<p>Pupils should be given opportunity to/ Pupils should be taught to:</p> <ul style="list-style-type: none"> -derive & use the standard ruler and compass constructions (perpendicular bisector of a line segment, constructing a perpendicular to a given line from/at a given point, bisecting a given angle); recognise and use the perpendicular distance from a point to a line as the shortest distance to the line -describe, sketch and draw using conventional terms and notations: points, lines, parallel lines, perpendicular lines, right angles, regular polygons, and other polygons that are reflectively and rotationally symmetric -derive & illustrate properties of triangles, quadrilaterals, circles, and other plane figures [for example, equal lengths and angles] using appropriate language and technologies -identify properties of, describe the results of, translations, rotations and reflections applied to given figures
Properties of 3-d shape	<p>Pupils should be given opportunity to/ Pupils should be taught to:</p> <ul style="list-style-type: none"> -use blocks to create their own simple structures, builds a tower -explore shape by sustained construction activity or by talking -begin to organise and categorise objects e.g. putting teddies in one pile, cars in another -fit small shapes and objects into holes during posting activities and inset puzzles -roll plasticine or playdoh into a sausage -match objects with parts that fit together e.g. puts lid on the teapot -sort objects into categories/ pairs of objects which go together 	<p>Pupils should be given opportunity to/ Pupils should be taught to:</p> <ul style="list-style-type: none"> -use familiar objects and common shapes to create and recreate patterns and build models explore characteristics of everyday objects and shapes and use mathematical language to describe them. 		<p>Pupils should be given opportunity to/ Pupils should be taught to:</p> <ul style="list-style-type: none"> •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. compare and sort common 2-D and 3-D shapes and everyday objects. 	<p>Pupils should be given opportunity to/ Pupils should be taught to:</p> <ul style="list-style-type: none"> •make 3-D shapes using modelling materials recognise 3-D shapes in different orientations and describe them 		<p>Pupils should be given opportunity to/ Pupils should be taught to:</p> <ul style="list-style-type: none"> •identify 3-D shapes, including cubes and other cuboids, from 2-D representations 	<p>Pupils should be given opportunity to/ Pupils should be taught to:</p> <ul style="list-style-type: none"> •recognise, describe and build simple 3-D shapes, including making nets •find unknown angles in any triangles, quadrilaterals, and regular polygons 	<p>Pupils should be given opportunity to/ Pupils should be taught to:</p> <ul style="list-style-type: none"> use the properties of faces, surfaces, edges and vertices of cubes, cuboids, prisms, cylinders, pyramids, cones and spheres to solve problems in 3-D

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Angles					<p>Pupils should be given opportunity to/ Pupils should be taught to:</p> <ul style="list-style-type: none"> •recognise angles as a property of shape or a description of a turn •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 or less than right angle 	<p>Pupils should be given opportunity to/ Pupils should be taught to:</p> <ul style="list-style-type: none"> •identify acute and obtuse angles and compare and order angles up to two right angles by size 	<p>Pupils should be given opportunity to/ Pupils should be taught to:</p> <ul style="list-style-type: none"> •know angles are measured in degrees: estimate and compare acute, obtuse and reflex angles •draw given angles, and measure them in degrees ($^{\circ}$) •identify angles at a point and one whole turn (total 360°); at a point on a straight line and $1/2$ a turn (total 180°) •identify other multiples of 90° 	<p>Pupils should be given opportunity to/ Pupils should be taught to:</p> <ul style="list-style-type: none"> •recognise angles where they meet at a point, are on a straight line, or are vertically opposite, and find missing angles 	<p>Pupils should be given opportunity to/ Pupils should be taught to:</p> <ul style="list-style-type: none"> •apply the properties of angles at a point, angles at a point on a straight line, vertically opposite angles • understand and use the relationship between parallel lines and alternate and corresponding angles • derive and use the sum of angles in a triangle and use it to deduce the angle sum in any polygon, and to derive properties of regular polygons • apply angle facts, triangle congruence, similarity and properties of quadrilaterals to derive results about angles and sides, including Pythagoras' Theorem, and use known results to obtain simple proofs • use Pythagoras' Theorem and trigonometric ratios in similar triangles to solve problems involving right-angled triangles

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Interpreting data /statistics				<p>Pupils should be given opportunity to/ Pupils should be taught to:</p> <ul style="list-style-type: none"> •interpret and construct simple pictograms, tally charts, block diagrams and simple tables 	<p>Pupils should be given opportunity to/ Pupils should be taught to:</p> <ul style="list-style-type: none"> •interpret and present data using bar charts, pictograms and tables 	<p>Pupils should be given opportunity to/ Pupils should be taught to:</p> <ul style="list-style-type: none"> •interpret and present discrete and continuous data using appropriate graphical methods, including bar charts and time graphs 	<p>Pupils should be given opportunity to/ Pupils should be taught to:</p> <ul style="list-style-type: none"> •complete, read and interpret information in tables, including timetables 	<p>Pupils should be given opportunity to/ Pupils should be taught to:</p> <ul style="list-style-type: none"> •interpret and construct pie charts and line graphs calculate and interpret the mean as an average 	<p>Pupils should be given opportunity to/ Pupils should be taught to:</p> <ul style="list-style-type: none"> ▪ describe, interpret and compare observed distributions of a single variable through: appropriate graphical representation involving discrete, continuous and grouped data; and appropriate measures of central tendency (mean, mode, median) and spread (range, consideration of outliers) ▪ construct and interpret appropriate tables, charts, and diagrams, including frequency tables, bar charts, pie charts, and pictograms for categorical data, and vertical line (or bar) charts for ungrouped and grouped numerical data ▪ describe simple mathematical relationships between two variables (bivariate data) in observational and experimental contexts and illustrate using scatter graphs.
Extract info from data				<p>Pupils should be given opportunity to/ Pupils should be taught to:</p> <ul style="list-style-type: none"> •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 	<p>Pupils should be given opportunity to/ Pupils should be taught to:</p> <ul style="list-style-type: none"> •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 	<p>Pupils should be given opportunity to/ Pupils should be taught to:</p> <ul style="list-style-type: none"> •solve comparison, sum and difference problems using information presented in bar charts, pictograms, tables and other graphs 	<p>Pupils should be given opportunity to/ Pupils should be taught to:</p> <ul style="list-style-type: none"> •solve comparison, sum and difference problems using information presented in a line graph 	<p>Pupils should be given opportunity to/ Pupils should be taught to:</p> <ul style="list-style-type: none"> •use pie charts and line graphs to solve problems 	

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Ratio & Proportion								<p>Pupils should be given opportunity to/ Pupils should be taught to:</p> <ul style="list-style-type: none"> •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 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. 	<p>Pupils should be given opportunity to/ Pupils should be taught to:</p> <ul style="list-style-type: none"> use ratio notation, including reduction to simplest form <ul style="list-style-type: none"> ▪ divide a given quantity into two parts in a given part:part or part:whole ratio; express the division of a quantity into two parts as a ratio ▪ understand that a multiplicative relationship between two quantities can be expressed as a ratio or a fraction relate the language of ratios and the associated calculations to the arithmetic of fractions and to linear functions
Algebra	<p>Pupils should be given opportunity to/ Pupils should be taught to:</p> <ul style="list-style-type: none"> -notice simple shapes or patterns in pictures -match sequence or patterns of blocks or beads 	<p>Pupils should be given opportunity to/ Pupils should be taught to:</p> <ul style="list-style-type: none"> -use familiar objects and common shapes to create and recreate patterns and describe patterns 						<p>Pupils should be given opportunity to/ Pupils should be taught to:</p> <ul style="list-style-type: none"> •use simple formulae •generate and describe linear number sequences •express missing number problems algebraically •find pairs of numbers that satisfy an equation with two unknowns •enumerate possibilities of combinations of two variables. 	<p>Pupils should be given opportunity to/ Pupils should be taught to:</p> <ul style="list-style-type: none"> -use and interpret algebraic notation, -coefficients written as fractions rather than as decimals -brackets -substitute numerical values into formulae & expressions -understand and use the concepts and vocabulary of expressions, equations, inequalities, terms and factors -simplify and manipulate algebraic expressions to maintain equivalence by: <ul style="list-style-type: none"> ▪ collecting like terms ▪ multiplying a single term over a bracket ▪ taking out common factors expanding products of two or more binomials <ul style="list-style-type: none"> ▪ understand and use standard mathematical formulae; rearrange formulae to change the subject ▪ model situations or procedures by translating them into algebraic expressions or formulae and by using graphs ▪ Linear equations of x, solve, represent graphically -quadratic functions of x Terms of sequence and arithmetic sequences including nth term

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Probability									<p>Pupils should be given opportunity to/ Pupils should be taught to:</p> <p>record, describe and analyse the frequency of outcomes of simple probability experiments involving randomness, fairness, equally and unequally likely outcomes, using appropriate language and the 0-1 probability scale</p> <p>understand that the probabilities of all possible outcomes sum to 1</p> <p>enumerate sets and unions/intersections of sets systematically, using tables, grids and Venn diagrams</p> <p>generate theoretical sample spaces for single and combined events with equally likely, mutually exclusive outcomes and use these to calculate theoretical probabilities.</p>

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