MATHS PROGRESSION

	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Place Value: Counting	Have a deep understanding of number to 10, including the composition of each number.	Count to and across 100, forwards and backwards, beginning with 0 or 1, or from any given number.	Count in steps of 2, 3 and 5 from 0, and in tens from any number, forward and backward.	Count from 0 in multiples of 4, 8, 50 and 100; find 10 or 100 more or less than a given number.	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.	
	Subitise (recognise quantities without counting) up to 5.	Count numbers to 100 in numerals; count in multiples of 2s, 5s and 10s.			Count backwards through zero to include negative numbers.	Count forwards and backwards with positive and negative whole numbers, including through zero.	
Place Value: Represent	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.	Identify and represent numbers using objects and pictorial representations.	Read and write numbers to at least 100 in numerals and words.	Identify, represent and estimate numbers using different representations.	Identify, represent and estimate numbers using different representations.	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.
	Verbally count beyond 20, recognising the pattern of the counting system.	Read and write numbers to 100 in numerals.	Identify, represent and estimate numbers using different representations, including the numbers line.	Read and write numbers up to 1000 in numerals and in words.	Read Roman numerals to 100 (I to C) and know that over time, the numerical system changed to include the concept of zero and place value.	Read Roman numerals to 1000 (M) and recognise years written in Roman numerals.	
	Compare quantities up to 10 in different contexts, recognising when one quantity is greater than, less than or the same as the other quantity.	Read and write numbers from 1 to 20 in numerals and words.					
Place Value: Use PV and Compare		• Given a number, identify one more and one less.	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).	Find 1000 more or less than a given number.	(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.
			Compare and order numbers from 0 up to 100; use <, > and = signs.	Compare and order numbers up to 1000.	Recognise the place value of each digit in a four-digit number (thousands, hundreds, tens, ones).		
					Order and compare numbers beyond 1000.		
Place Value: Problems and Rounding	Explore and represent patterns within numbers up to 10, including evens and odds, double facts and how quantities can be distributed equally.		Use place value and number facts to solve problems.	Solve number problems and practical problems involving these ideas.	Round any number to the nearest 10, 100 or 1000.	Interpret negative numbers in context.	Round any whole number to a required degree of accuracy.
					Solve number and practical problems that involve all of the above with increasingly large positive numbers.	Round any number up to 1,000,000 to the nearest 10, 100, 1000, 10000 and 100000.	Use negative numbers in context, and calculate intervals across zero.
						Solve number problems and practical problems that involve all of the above.	Solve number and practical problems that involve all of the above.

Addition and Subtraction: Recall, represent, Use		Read write and interpret mathematical statements involving addition (+), subtraction (-) and equals (=) signs.	Recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100.	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.	
		Represent and use number bonds and related subtraction facts within 20.	Show that addition of two numbers can be done in any order (commutative) and subtraction of one number from another cannot.				
			Recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems.				
Addition and Subtraction: 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 with up to 4 digits using the formal written methods of columnar addition and subtraction where appropriate.	Add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction).	Perform mental calculations, including with mixed operations and large numbers.
				Add and subtract numbers with up to three digits, using formal written methods of columnar addition and subtraction.		Add and subtract numbers mentally with increasingly large numbers.	Use their knowledge of the order of operations to carry out calculations involving the four operations.
Addition and Subtraction: Solve Problems		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 problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign.	
Multiplication and Division: Recall, represent, Use			Recall and use multiplication and division fats 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 the multiplication tables up to 12x12.	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.
					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.	Know and use the vocabulary of prime numbers, prime factors and composite (non-prime) numbers.	
			Show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot.			Establish whether a number up to 100 is prime and recall prime numbers up to 19.	Use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy.
					Recognise and use factor pairs and commutativity in mental calculations.	Recognise and use square numbers and cube numbers, and the notation for squared (^{2}) and cubed (^{3}).	

Multiplication and Division: Calculations			Calculate mathematical statements for multiplication and division pithing the multiplication tables and write them using the multiplication (x), 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-digits and three-digit numbers by a one-digit number using formal written layout.	Multiply numbers up to 4 digits by a one-digit 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.
						Multiply and divide numbers mentally drawing upon known facts.	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 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 number using the formal written method of short division where appropriate, interpreting remainders according to the context.
						Multiply and divide whole numbers and those involving decimals by 10, 100 and 1000.	Perform mental calculations, including with mixed operations and large numbers.
Multiplication and Division: Solve Problems		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 n objects are connected to m 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 such as n objects connected to m objects.	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 multiplication and division, including scaling by simple fractions and problems involving simple rates.	
Multiplication and Division: Combined Operations						Solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign.	Use their knowledge of the order of operations to carry out calculations involving the four operations.

Fractions: Read and Write		Recognise, find and name a hall as one of two equal parts of an object, shape of quantity. Recognise, find and name a quarter as one of four equal parts of an object, shape or quantity.	Recognise, find, name and write fractions 1/3, 1/4, 2/4 and 3/4 of a length, shape, set of objects or quantity.	Count up and down in hundredths; recognise that tenths arise from dividing an object into 10 equal parts and in dividing one-digit number or quantities by 10. 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: units fractions and non-unit fractions with small denominators.	Count up and down in hundredths; recognise that hundredths arise when dividing an object by one hundred and dividing tenths by ten.	Identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths. Recognise mixed numbers and improper fractions and convert from one form to the other and write mathematical statements > 1 as a mixed number [for example, 2/5 + 4/5 = 6/5 = 1 1/5]	
Fractions: Compare			Recognise the equivalence of 2/4 and 1/2.	Recognise and show, using diagrams, equivalent fractions with small denominators. Compare and order unit fractions, and fractions with the same denominators.	Recognise and show, using diagrams, families of common equivalent fractions.	Compare and order fractions whose denominators are all multiples of the same number.	Use common factors to simplify fractions; use common multiples to express fractions in the same denomination. Compare and order fractions, including fractions > 1.
Fractions: Calculations			Write simple fractions for example, 1/2 of 6 = 3.	Add and subtract fractions with the same denominator within one whole [for example, 5/7 + 1/7 = 6/7]	Add and subtract fractions with the same denominator.	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.	Add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions. Multiply simple pairs of proper fraction, writing the answer in its simplest form [for example, 1/4 x 1/2 = 1/8] Divide proper fractions by whole numbers [for example, 1/3 ÷ 2 = 1/6]
Fractions: Solve Problems				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.		
Decimals: Read and write					Recognise and write decimal equivalents of any number of tenths r hundredths. Recognise and write decimal equivalents to 1/4, 1/2, 3/4.	Read and write decimal numbers as fractions [for example, 0.71 = 71/100] Recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents.	Identify the value of each digit in numbers given to three decimal places.

Decimals: Compare					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.	
					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.	
Decimals: Calculations and Problems					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.	Solve problems involving number up to three decimal places.	Multiply and divide numbers by 10, 100 and 1000 giving answers up to three decimal places.
							Multiply one-digit numbers with up to two decimal places by whole numbers.
							Use written division methods in cases where the answer has up to two decimal places.
							Solve problems which require answers to be rounded to specified degrees of accuracy.
Fractions, Decimals and Percentages					Solve simple measure and money problems involving fractions and decimals to two decimal places.	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.	Associate a fraction with division and calculate decimal fraction equivalents [for example, 0.375] for a simple fraction [for example 3/8]
						Solve problems which require knowing percentage and decimal equivalents of 1/2, 1/4, 1/5, 2/5, 4/5 and those fractions with a denominator of a multiple of 10 or 25.	Recall and use equivalences between simple fractions, decimals and percentages, including in different contexts.
Ratio and Proportion							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.
Algebra							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.
Measurement: Using Measures	Make comparisons between objects relating to size, length, weight and capacity.	Compare, describe and solve practical problems for: lengths and heights [for example, long/short, longer/shorter, tall/short, double/half]; mass/weight [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]	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 nearest appropriate unit, using rulers, scales, thermometers and measuring vessels.	Measure, compare, add and subtract; lengths (m/cm/mm); mass (kg/g); volume/capacity (l/ml).	Convert between different units of measure [for example, kilometre to metre; hour to minute]	Convert between different units of metric measure (for example, kilometre and metre; centimetre and metre; centimetre and millimetre; gram and kilogram; litre and millilitre).	Solve problems involving the calculation and conversion of units of measure, using decimal notation up to three decimal places where appropriate.
	Compare length, weight and capacity.				Estimate, compare and calculate different measures.	Understand and use approximate equivalences between metric units and common imperial units such as inches, pounds and pints.	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 up to three decimal places.
		measure and begin to record the following: lengths and heights; mass/weight; capacity and volume; time (hours, minutes, seconds)	Compare and order lengths, mass, volume/capacity and record the results using <, > and =.			Use all four operations to solve problems involving measure [for example, length, mass, volume, money] using decimal notation, including scaling.	Convert between miles and kilometres.
Measurement: Money		Recognise and know the value of different denominations of coins and notes.	Recognise and use symbols and pounds (£) and pence (p); combine amounts to make a particular value.	Add and subtract amounts of money to give change, using both £ and p in practical contexts.	Estimate, compare and calculate different measures, including money in pounds and pence.	Use all four operations to solve problems involving measure [for example, money]	
			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.				
Measurement: Time		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.	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.	Solve problems involving converting between units of times.	Use, read, write and convert between standard units, converting measurements of time from a smaller unit of measure to a larger unit, and vice versa.
		Recognise and use language relating to dates, including days of the week, weeks, months and years.	Tell and write the time in five minutes, including quarter past/to the hour and draw the hands on a clock face to show these times.	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.			
		Tell the time to the hour and half past 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.	Know the number of seconds in a minute and the number of days in each month, year and leap year.	Solve problems involving converting from hours to minutes; minutes to seconds; years to months; weeks to days.		
				Compare durations of events [for example to calculate the time taken by particular events or tasks].			
Measurement: Perimeter, Area, Volume				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.
						Calculate and compare the area of rectangles (including squares), and including using standard units, square centimetres (cm^2) and square metres (m^2) and estimate the area of irregular shapes.	Recognise when it is possible to use formulae for area and volume of shapes.
					Find the area of rectilinear shapes by counting squares.	Estimate volume [for example, using $1cm^3$ blocks to build cuboids (including cubes)] and capacity [for examples, using water].	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].
Geometry: 2-D Shapes	Talk about and explore 2D and 3D shapes (for example, circles, rectangles, triangles and cuboids) using informal and mathematical language: 'sides', 'corners', 'straight', 'flat', 'round'.	Recognise and name common 2-D shapes [for example, rectangles (including squares), circles and triangles.	Identify and describe the properties of 2-D shapes, including the number of sides and line symmetry in a vertical line.	Draw 2-D shapes.	Compare and classify geometric shapes, including quadrilaterals and triangles, based on their properties and sizes.	Distinguish between regular and irregular polygons based on reasoning about equal sides and angels.	Draw 2-D shapes using given dimensions and angles.
	Select shapes appropriately: flat surfaces for a building, a triangular pattern for a roof, etc.		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.	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.
	Combine shapes to make new ones – an arch, a bigger triangle, etc. Select, rotate and manipulate shapes in order to develop spatial reasoning skills.		Compare and sort common 2-D shapes and everyday objects.				Illustrate and name parts of circles, including radius, diameter and circumference and know that the diameter is twice the radius.
Geometry: 3-D Shapes	Compose and decompose shapes so that children can recognise a shape can have other shapes within it, just as numbers can.	Recognise and name common 3-D shapes [for example, cuboids (including cubes), pyramids and spheres].	Recognise and name common 3-D shapes [for example, subsides (including cubes), pyramids and spheres].	Make 3-D shapes using modelling materials; recognise 3-D shapes in different orientations and describe them.		Identify 3-D shapes, including cubes and other cuboids, from 2-D representations.	Recognise, describe and build simple 3-D shapes, including making nets.
			Compare and sort common 3-D shapes and everyday objects.				
Geometry: Angles and Lines				Recognise angles as a property of shape or description of a turn.	Identify acute and obtuse angles and compare and order angles up to two right angles by size.	Know angles are measured in degrees: estimate and compare acute, obtuse and reflex angles.	Find unknown angles in any triangles, quadrilaterals, and regular polygons.
				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 lines of symmetry in 2-D shapes presented in different orientations.	Draw given angles, and measure them in degrees.	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.	Complete a simple symmetrical figure with respect to a specific line of symmetry.	Identify: angles at a point and one whole turn (total 360°).; angles at a point on a straight line and 1/2 a turn (total 180°); other multiples of 90°.	

Geometry: Position and Direction		Describe position, direction and movement, including whole, half, quarter and three-quarter turns.	Order and arrange combinations of mathematical objects in patterns and sequences.		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).
			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 movements between positions as translations of a given unit to the left/right and up/down.		Draw and translate simple shapes on the coordinate place, and reflect them in the axes.
					Plot specified points and draw sides to complete a given polygon.		
Statistics: Present and Interpret			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.
Statistics: Solve Problems			Ask and answer simple questions by counting the number of objects in each category and sorting the categories by quantity.	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 different problems using information presented in a line graph.	Calculate and interpret the mean as an average.
			Ask and answer questions about totalling and comparing categorical data.				