Maths Knowledge and Skills Progression

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Place Value	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	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
	Count, read and write numbers to 100 in numerals	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	Count forwards or backwards in steps of powers of 10 for any given number up to 1 000 000	Round any whole number to a required degree of accuracy
	Count in multiples of twos, fives and tens	Identify, represent and estimate numbers using different representations, including the number line	Compare and order numbers up to 1000	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
	Given a number, identify one more and one less	Compare and order numbers from 0 up to 100; use <,>, and = signs	Identify, represent and estimate numbers using different representations	Recognise the place value of each digit in a four-digit number (thousands, hundreds, tens, and ones)	Round any number up to 1 000 000 to the nearest 10, 100, 1000, 10 000 and 100 000	Solve number and practical problems that involve all of the above

	Identify and represent numbers using objects and pictorial representations including the number line, and use the language of: equal to, more than, less than (fewer), most, least	Read and write numbers to at least 100 in numerals and in words	Read and write numbers up to 1000 in numerals and in words	Order and compare numbers beyond 1000	Solve number problems and practical problems that involve all of the above	
	Read and write numbers from 1 to 20 in numerals and words	Use place value and number facts to solve problems	Solve number problems and practical problems involving these ideas	Identify, represent and estimate numbers using different representations	Read Roman numerals to 1000 (M) and recognise years written in Roman numerals	
				Round any number to the nearest 10, 100 or 1000		
				Solve number and practical problems that involve all of the above and with increasingly large positive numbers		
				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		

Addition & Subtraction	Read, write and interpret mathematical statements involving addition (+), subtraction (-) and equals (=) signs	Solve problems with addition and subtraction: using concrete objects and pictorial representations, including those involving numbers, quantities and measures	Add and subtract numbers mentally, including: a three-digit number and ones	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)	Multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication
	Represent and use number bonds and related subtraction facts within 20	Solve problems with addition and subtraction: applying their increasing knowledge of mental and written methods	Add and subtract numbers mentally, including: a three-digit number and tens	Estimate and use inverse operations to check answers to a calculation	Add and subtract numbers mentally with increasingly large numbers	Multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of short multiplication
	Add and subtract one-digit and two-digit numbers to 20, including zero	Recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100	Add and subtract numbers mentally, including: a three-digit number and hundreds	Solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why	Use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy	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

	Solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as 7 = [ ] - 9	Add and subtract numbers using concrete objects, pictorial representations, and mentally, including: a two-digit number and ones	Add and subtract numbers with up to three digits, using formal written methods of columnar addition and subtraction		Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why	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
		Add and subtract numbers using concrete objects, pictorial representations, and mentally, including: a two-digit number and tens	Estimate the answer to a calculation and use inverse operations to check answers			Perform mental calculations, including with mixed operations and large numbers
		Add and subtract numbers using concrete objects, pictorial representations, and mentally, including: two two-digit numbers	Solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction			Identify common factors, common multiples and prime numbers
		Add and subtract numbers using concrete objects, pictorial representations, and mentally, including:				Use their knowledge of the order of operations to carry out calculations

		adding three one-digit numbers			involving the four operations
		Show that addition of two numbers can be done in any order (commutative) and subtraction of one number from another cannot			Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why
		Recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems			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.

Multiplication & Division	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	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	Identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers	As above.
		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	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	Solve problems, including missing number problems, involving multiplication and division, including positive integer	Recognise and use factor pairs and commutativity in mental calculations	Establish whether a number up to 100 is prime and recall prime numbers up to 19	

		number by another cannot	scaling problems and correspondence problems in which n objects are connected to m objects			
		Solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts		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	
				Solve problems involving multiplying and adding, including using the distributive law to multiply two digit numbers by one digit	Multiply and divide numbers mentally drawing upon known facts	
				Integer scaling problems and harder correspondence problems such as n objects are	Divide numbers up to 4 digits by a one-digit number using the formal written method of short division and interpret	

				connected to m objects	remainders appropriately for the context	
					Multiply and divide whole numbers and those involving decimals by 10, 100 and 1000	
					Recognise and use square numbers and cube numbers, and the notation for squared (2) and cubed (3)	
					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	
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 one third, one quarter, two quarters and three quarters of a length, shape, set of objects or quantity	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	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
	Recognise, find and name a quarter as one of four equal parts of an object, shape or quantity	Write simple fractions for example, half of 6 = 3 and recognise the equivalence of two quarters and a half	Recognise, find and write fractions of a discrete set of objects: unit 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	Compare and order fractions, including fractions > 1

			Recognise and use fractions as numbers: unit fractions (e.g. 1/2, 1/4) and non-unit fractions (e.g. 3/4, 2/5) with small denominators	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	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, two fifths + four fifths = six fifths = 1one fifth]	Add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions
			Recognise and show, using diagrams, equivalent fractions with small denominators	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 simple pairs of proper fractions, writing the answer in its simplest form [for example, one quarter × a half = one eighth]
			Add and subtract fractions with the same denominator within one whole [for example, five sevenths + one seventh = six sevenths]	Recognise and write decimal equivalents of any number of tenths or hundredths	Multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams	Divide proper fractions by whole numbers [for example, one third ÷ 2 = one sixth]
			Compare and order unit fractions, and fractions with the same denominators	Recognise and write decimal equivalents to one quarter, a half, three quarters	Read and write decimal numbers as fractions [for example, 0.71 =	Associate a fraction with division and calculate decimal fraction

					seventy-one hundredths]	equivalents [for example, 0.375] for a simple fraction [for example, three eighths]
			Solve problems that involve all of the above	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	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 and multiply and divide numbers by 10, 100 and 1000 giving answers up to three decimal places
				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	Multiply one-digit numbers with up to two decimal places by whole numbers
				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	Use written division methods in cases where the answer has up to two decimal places
				Solve simple measure and money problems involving fractions and	Solve problems involving number up to three decimal places	Solve problems which require answers to be rounded to

				decimals to two decimal places		specified degrees of accuracy
					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	Recall and use equivalences between simple fractions, decimals and percentages, including in different contexts
					Solve problems which require knowing percentage and decimal equivalents of a half, one quarter, one fifth, two fifths, four fifths and those fractions with a denominator of a multiple of 10 or 25	
Measurement	Compare, describe and solve practical problems for: lengths and heights [for example, long/short, longer/shorter,	Choose and use appropriate standard units to estimate and measure length/height in any direction (m/cm); mass (kg/g);	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;	Solve problems involving the calculation and conversion of units of measure, using decimal notation up to three

	tall/short, double/half]	temperature (°C); capacity (litres/ml) to the nearest appropriate unit, using rulers, scales, thermometers and measuring vessels			gram and kilogram; litre and millilitre)	decimal places where appropriate
	Compare, describe and solve practical problems for: mass/weight [for example, heavy/light, heavier than, lighter than]	Compare and order lengths, mass, volume/capacity and record the results using >, < and =	Measure the perimeter of simple 2-D shapes	Measure and calculate the perimeter of a rectilinear figure (including squares) in centimetres and metres	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 to up to three decimal places
	Compare, describe and solve practical problems for: capacity and volume [for example, full/empty, more than, less than, half, half full, quarter]	Recognise and use symbols for 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	Find the area of rectilinear shapes by counting squares	Measure and calculate the perimeter of composite rectilinear shapes in centimetres and metres	Convert between miles and kilometres

	Compare, describe and solve practical problems for: time [for example, quicker, slower, earlier, later]	Find different combinations of coins that equal the same amounts of money	Tell and write the time from an analogue clock, including using Roman numerals from I to XII	Estimate, compare and calculate different measures, including money in pounds and pence	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	Recognise that shapes with the same areas can have different perimeters and vice versa
	Measure and begin to record the following: lengths and heights	Solve simple problems in a practical context involving addition and subtraction of money of the same unit, including giving change	Tell and write the time from an analogue clock - 12-hour and 24-hour clocks	Read, write and convert time between analogue and digital 12- and 24-hour clocks	Estimate volume [for example, using 1 cm3 blocks to build cuboids (including cubes)] and capacity [for example, using water]	Recognise when it is possible to use formulae for area and volume of shapes
	Measure and begin to record the following: mass/weight	Compare and sequence intervals of time	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	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	Calculate the area of parallelograms and triangles

	Measure and begin to record the following: capacity and volume	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 seconds in a minute and the number of days in each month, year and leap year		Use all four operations to solve problems involving measure [for example, length, mass, volume, money] using decimal notation, including scaling	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 [for example, mm3 and km3]
	Measure and begin to record the following: time (hours, minutes, seconds)	Know the number of minutes in an hour and the number of hours in a day	Compare durations of events [for example to calculate the time taken by particular events or tasks]			
	Recognise and know the value of different denominations of coins and notes					
	Sequence events in chronological order using language [for example, before and after, next, first, today, yesterday, tomorrow, morning, afternoon and evening]					

	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					
Geometry Shapes	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 and make 3-D shapes using modelling materials; recognise 3-D shapes in different orientations and describe them	Compare and classify geometric shapes, including quadrilaterals and triangles, based on their properties and sizes	Identify 3-D shapes, including cubes and other cuboids, from 2-D representations	Draw 2-D shapes using given dimensions and angles
	3-D shapes [for example, cuboids (including cubes), pyramids and spheres]	Identify and describe the properties of 3-D shapes, including the number of edges, vertices and faces	Recognise angles as a property of shape or a 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	Recognise, describe and build simple 3-D shapes, including making nets
		Identify 2-D shapes on the surface of 3-D shapes, [for example, a circle on a cylinder and a	Identify right angles, recognise that two right angles make a half-turn, three make three quarters of a turn and four a	Identify lines of symmetry in 2-D shapes presented in different orientations	Draw given angles, and measure them in degrees (o)	Compare and classify geometric shapes based on their properties and sizes and find unknown angles in

		triangle on a pyramid]	complete turn; identify whether angles are greater than or less than a right angle			any triangles, quadrilaterals, and regular polygons
		Compare and sort common 2-D and 3-D shapes and everyday objects	Identify horizontal and vertical lines and pairs of perpendicular and parallel lines	Complete a simple symmetric figure with respect to a specific line of symmetry	Identify: angles at a point and one whole turn (total 360)	Illustrate and name parts of circles, including radius, diameter and circumference and know that the diameter is twice the radius
					Identify: angles at a point on a straight line and a half 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: other multiples of 90	
					Use the properties of rectangles to deduce related facts and find missing lengths and angles	
					Distinguish between regular and irregular	

Geometry Position & Direction					polygons based on reasoning about equal sides and angles	
Geometry Position & 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	Not applicable	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 plane, and reflect them in the axes
				Plot specified points and draw sides to complete a given polygon		

Statistics	Not applicable	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	Solve comparison, sum and difference problems using information presented in a line graph	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	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	Complete, read and interpret information in tables, including timetables	Calculate and interpret the mean as an average
		Ask and answer questions about totalling and comparing categorical data				
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.
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. |