By the End of Year 3

Number				Measurement	Geometry		Statistics
Place Value	Addition and Subtraction	Multiplication and Division	Fractions and Decimals		Properties of Shape	Position and Direction	
count from 0 in multiples of 4, 8, 50 and 100; find 10 or 100 more or less than a given number	add and subtract numbers mentally, including: a three-digit number and 1s, a three-digit number and 10s, a three-digit number and 100s	recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables	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	measure, compare, add and subtract: lengths (m/cm/mm); mass (kg/g); volume/capacity (l/ml)	draw 2-D shapes and make 3-D shapes using modelling materials; recognise 3-D shapes in different orientations and describe them		interpret and present data using bar charts, pictograms and tables
recognise the place value of each digit in a 3-digit number (100s, 10s, 1s)	add and subtract numbers with up to 3 digits, using formal written methods of columnar addition and subtraction	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	recognise, find and write fractions of a discrete set of objects: unit fractions and non-unit fractions with small denominators	measure the perimeter of simple 2-D shapes	recognise angles as a property of shape or a description of a turn		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
compare and order numbers up to 1,000	estimate the answer to a calculation and use inverse operations to check answers	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	recognise and use fractions as numbers: unit fractions and non-unit fractions with small denominators	add and subtract amounts of money to give change, using both £ and p in practical contexts	identify right angles, recognise that 2 right angles make a half-turn, 3 make three-quarters of a turn and 4 a complete turn; identify whether angles are greater than or less than a right angle		understand and use simple scales (for example, 2, 5, 10 units per cm) in pictograms and bar charts with increasing accuracy
identify, represent and estimate numbers using different representations	solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction	continue to practise their mental recall of multiplication tables when they are calculating mathematical statements in order to improve fluency. Through doubling, they connect the 2, 4 and 8 multiplication tables.	recognise and show, using diagrams, equivalent fractions with small denominators	tell and write the time from an analogue clock, including using Roman numerals from I to XII, and 12-hour and 24-hour clocks	identify horizontal and vertical lines and pairs of perpendicular and parallel lines		continue to interpret data presented in many contexts
read and write numbers up to 1,000 in numerals and in words	practise solving varied addition and subtraction questions. For mental calculations with two-digit numbers, the answers could exceed 100.	develop efficient mental methods, for example, using commutativity and associativity (for example, 4 × 12 × 5 = 4 × 5 × 12 = 20 × 12 = 240) and multiplication and division facts (for example, using 3 × 2 = 6, 6	add and subtract fractions with the same denominator within one whole	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, am/pm, morning, afternoon, noon and	Pupils' knowledge of the properties of shapes is extended at this stage to symmetrical and non-symmetrical polygons and polyhedra. Pupils extend their use of the properties of shapes		
solve number problems and practical problems involving these ideas	use their understanding of place value and partitioning, and practise using columnar addition and subtraction with increasingly large numbers up to 3 digits to become fluent	develop reliable written methods for multiplication and division, starting with calculations of two-digit numbers by one-digit numbers and progressing to the formal written methods of short multiplication and division	compare and order unit fractions, and fractions with the same denominators	know the number of seconds in a minute and the number of days in each month, year and leap year	They should be able to describe the properties of 2-D and 3-D shapes using accurate language, including lengths of lines and acute and obtuse for angles greater or lesser than a right angle		
use multiples of 2, 3, 4, 5, 8, 10, 50 and 100.		solve simple problems in contexts, deciding which of the 4 operations to use and why. These include measuring and scaling contexts, (for example 4 times as high, 8 times as long etc) and correspondence problems in which m	solve problems that involve all of the above	compare durations of events [for example, to calculate the time taken by particular events or tasks]	connect decimals and rounding to drawing and measuring straight lines in centimetres, in a variety of contexts		
use larger numbers to at least 1,000, applying partitioning related to place value using varied and increasingly complex problems, building on work in year 2 (for example, 146 = 100 + 40 + 6, 146 = 130 +16)			connect tenths to place value, decimal measures and to division by 10	continue to measure using the appropriate tools and units, progressing to using a wider range of measures, including comparing and using mixed units (for example, 1 kg and 200g) and simple equivalents of mixed units			
Using a variety of representations, including those related to measure, pupils continue to count in 1s, 10s and 100s, so that they become fluent in the order and place value of numbers to 1,000.			begin to understand unit and non-unit fractions as numbers on the number line, and deduce relations between them, such as size and equivalence. They should go beyond the [0, 1] interval, including relating this to	The comparison of measures includes simple scaling by integers (for example, a given quantity or measure is twice as long or 5 times as high) and this connects to multiplication			
			understand the relation between unit fractions as operators (fractions of), and division by integers	continue to become fluent in recognising the value of coins, by adding and subtracting amounts, including mixed units, and giving change using manageable amounts. They record £ and p separately. The decimal			
			continue to recognise fractions in the context of parts of a whole, numbers, measurements, a shape, and unit fractions as a division of a quantity	use both analogue and digital 12-hour clocks and record their times. In this way they become fluent in and prepared for using digital 24-hour clocks in year 4.			
			practise adding and subtracting fractions with the same denominator through a variety of increasingly complex problems to improve fluency				

By the End of Year 4

Number				Measurement	Geometry		Statistics
Place Value	Addition and Subtraction	Multiplication and Division	Fractions and Decimals		Properties of Shape	Position and Direction	
count in multiples of 6, 7, 9, 25 and 1,000	add and subtract numbers with up to 4 digits using the formal written methods of columnar addition and subtraction where appropriate	recall multiplication and division facts for multiplication tables up to 12 × 12	recognise and show, using diagrams, families of common equivalent fractions	convert between different units of measure [for example, kilometre to metre; hour to minute]	compare and classify geometric shapes, including quadrilaterals and triangles, based on their properties and sizes	describe positions on a 2-D grid as coordinates in the first quadrant	interpret and present discrete and continuous data using appropriate graphical methods, including bar charts and time graphs
find 1,000 more or less than a given number	estimate and use inverse operations to check answers to a calculation	use place value, known and derived facts to multiply and divide mentally, including: multiplying by 0 and 1; dividing by 1; multiplying together 3 numbers	count up and down in hundredths; recognise that hundredths arise when dividing an object by 100 and dividing tenths by 10	measure and calculate the perimeter of a rectilinear figure (including squares) in centimetres and metres	identify acute and obtuse angles and compare and order angles up to 2 right angles by size	describe movements between positions as translations of a given unit to the left/right and up/down	solve comparison, sum and difference problems using information presented in bar charts, pictograms, tables and other graphs
count backwards through 0 to include negative numbers	solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why	recognise and use factor pairs and commutativity in mental calculations	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	find the area of rectilinear shapes by counting squares	identify lines of symmetry in 2-D shapes presented in different orientations	plot specified points and draw sides to complete a given polygon	understand and use a greater range of scales in their representations
recognise the place value of each digit in a four-digit number (1,000s, 100s, 10s, and 1s)	Pupils continue to practise both mental methods and columnar addition and subtraction with increasingly large numbers to aid fluency	multiply two-digit and three-digit numbers by a one-digit number using formal written layout	add and subtract fractions with the same denominator	estimate, compare and calculate different measures, including money in pounds and pence	complete a simple symmetric figure with respect to a specific line of symmetry	draw a pair of axes in one quadrant, with equal scales and integer labels. They read, write and use pairs of co-ordinates, for example (2, 5), including using co-ordinate-plotting ICT tools	begin to relate the graphical representation of data to recording change over time
order and compare numbers beyond 1,000		solve problems involving multiplying and adding, including using the distributive law to multiply two-digit numbers by 1 digit, integer scaling problems and harder correspondence problems such as n objects are connected to m	recognise and write decimal equivalents of any number of tenths or hundreds	read, write and convert time between analogue and digital 12- and 24-hour clocks	continue to classify shapes using geometrical properties, extending to classifying different triangles (for example, isosceles, equilateral, scalene) and quadrilaterals (for example, parallelogram, rhombus, trapezium)		
identify, represent and estimate numbers using different representations		Pupils continue to practise recalling and using multiplication tables and related division facts to aid fluency	recognise and write decimal equivalents to 1/4, 1/2, 3/4	solve problems involving converting from hours to minutes, minutes to seconds, years to months, weeks to days	compare and order angles in preparation for using a protractor and compare lengths and angles to decide if a polygon is regular or irregular.		
round any number to the nearest 10, 100 or 1,000		Pupils practise mental methods and extend this to 3-digit numbers to derive facts, (for example 600 ÷ 3 = 200 can be derived from 2 x 3 = 6)	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	Pupils build on their understanding of place value and decimal notation to record metric measures, including money	draw symmetric patterns using a variety of media to become familiar with different orientations of lines of symmetry; and recognise line symmetry in a variety of diagrams, including where the line of		
solve number and practical problems that involve all of the above and with increasingly large positive numbers		Pupils practise to become fluent in the formal written method of short multiplication and short division with exact answers	round decimals with 1 decimal place to the nearest whole number	They use multiplication to convert from larger to smaller units			
read Roman numerals to 100 (I to C) and know that over time, the numeral system changed to include the concept of 0 and place value		Pupils write statements about the equality of expressions (for example, use the distributive law 39 × 7 = 30 × 7 + 9 × 7 and associative law (2 × 3) × 4 = 2 × (3 × 4)). They combine their knowledge of number facts and rules of	compare numbers with the same number of decimal places up to 2 decimal places	Perimeter can be expressed algebraically as 2 (a + b) where a and b are the dimensions in the same unit			
Using a variety of representations, including measures, pupils become fluent in the order and place value of numbers beyond 1,000, including counting in 10s and 100s, and maintaining fluency in other multiples through		solve two-step problems in contexts, choosing the appropriate operation, working with increasingly harder numbers. This should include correspondence questions such as the numbers of choices of a meal on a menu, or 3	solve simple measure and money problems involving fractions and decimals to 2 decimal places	relate area to arrays and multiplication			

begin to extend their knowledge of the number system to include the decimal numbers and fractions that they have met so far.		connect hundredths to tenths and place value and decimal measure		
connect estimation and rounding numbers to the use of measuring instruments		extend the use of the number line to connect fractions, numbers and measures		
Roman numerals should be put in their historical context so pupils understand that there have been different ways to write whole numbers and that the important concepts of 0 and place value were introduced over a period		understand the relation between non-unit fractions and multiplication and division of quantities, with particular emphasis on tenths and hundredths		
		make connections between fractions of a length, of a shape and as a representation of one whole or set of quantities. Pupils use factors and multiples to recognise equivalent fractions and simplify where appropriate		
		continue to practise adding and subtracting fractions with the same denominator, to become fluent through a variety of increasingly complex problems beyond one whole. Pupils are taught throughout that		
		Pupils' understanding of the number system and decimal place value is extended at this stage to tenths and then hundredths. This includes relating the decimal notation to division of whole number by 10 and later 100		
		practise counting using simple fractions and decimals, both forwards and backwards		
		learn decimal notation and the language associated with it, including in the context of measurements.		
		make comparisons and order decimal amounts and quantities that are expressed to the same number of decimal places		
		represent numbers with 1 or 2 decimal places in several ways, such as on number lines		