



Mathematics

Intent: Mathematics is an important creative discipline that helps us to understand and change the world. At Chaddlewood Primary School we want everyone to experience the beauty, power and enjoyment of mathematics and develop a sense of curiosity about the subject. We believe all children can achieve in mathematics, and teach in ways to secure deep understanding of mathematical concepts through manageable, small steps. We use mistakes and misconceptions as an essential part of the learning process and provide challenge for all learners through rich and sophisticated problems. We also understand the vital roles that parents play in continuing this learning at home, as our children spend time becoming true masters of the explored content. We aim for all children to:

- have a positive attitude and self confidence in their ability, whilst showcasing their love of mathematics.
- have an appreciation of number and number operations, which enables mental calculations and written procedures to be performed efficiently, fluently and accurately.
- become fluent in the fundamentals of mathematics so that they develop conceptual understanding and the ability to recall and apply knowledge rapidly.
- be able to solve problems by tackling questions systematically and with increasing sophistication, including in unfamiliar contexts and real-life scenarios.
- reason mathematically by following a line of enquiry and for them to develop and present a justification, argument or proof using mathematical language.

Chaddlewood Primary School's Mathematics Progression Grid

Key Skill	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Number and place value - counting	count to and across 100, forwards and backwards, beginning with 0 or 1, or from any given number			count backwards through zero to include negative numbers	interpret negative numbers in context, count forwards and backwards with positive and negative whole numbers, including through zero	use negative numbers in context, and calculate intervals across zero
	count, read and write numbers to 100 in numerals; count in multiples of twos, fives and tens	count in steps of 2, 3, and 5 from 0, and in tens from any number, forward or backward	count from 0 in multiples of 4, 8, 50 and 100;	count in multiples of 6, 7, 9, 25 and 1 000	count forwards or backwards in steps of powers of 10 for any given number up to 1 000 000	
	given a number, identify one more and one less		find 10 or 100 more or less than a given number	find 1 000 more or less than a given number		
Number and place value – comparing numbers	use the language of: equal to, more than, less than (fewer), most, least	compare and order numbers from 0 up to 100; use <, > and = signs	compare and order numbers up to 1 000	order and compare numbers beyond 1 000	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 (appears also in
				<i>compare numbers with the same number of decimal</i>		

				<i>places up to two decimal places (copied from Fractions)</i>	(appears also in Reading and Writing Numbers)	Reading and Writing Numbers)
Number and place value – Identifying, representing and estimating numbers	identify and represent numbers using objects and pictorial representations including the number line	identify, represent and estimate numbers using different representations, including the number line	identify, represent and estimate numbers using different representations	identify, represent and estimate numbers using different representations		
Number and place value – Reading and writing numbers (including Roman numerals)	read and write numbers from 1 to 20 in numerals and words.	read and write numbers to at least 100 in numerals and in words	read and write numbers up to 1 000 in numerals and in words		read, write, order and compare numbers to at least 1 000 000 and determine the value of each digit (appears also in Comparing Numbers)	read, write, order and compare numbers up to 10 000 000 and determine the value of each digit (appears also in Understanding Place Value)
			<i>tell and write the time from an analogue clock, including using Roman numerals from I to XII, and 12-hour and 24-hour clocks (copied from Measurement)</i>	read Roman numerals to 100 (I to C) and know that over time, the numeral system changed to include the concept of zero and place value.	read Roman numerals to 1 000 (M) and recognise years written in Roman numerals.	

Number and place value – Understanding place value		recognise the place value of each digit in a two-digit number (tens, ones)	recognise the place value of each digit in a three-digit number (hundreds, tens, ones)	recognise the place value of each digit in a four-digit number (thousands, hundreds, tens, and ones)	read, write, order and compare numbers to at least 1 000 000 and determine the value of each digit (appears also in Reading and Writing Numbers)	read, write, order and compare numbers up to 10 000 000 and determine the value of each digit (appears also in Reading and Writing Numbers)
				<i>find the effect of dividing a one- or two-digit number by 10 and 100, identifying the value of the digits in the answer as units, tenths and hundredths (copied from Fractions)</i>	<i>recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents (copied from Fractions)</i>	<i>identify the value of each digit to three decimal places and multiply and divide numbers by 10, 100 and 1 000 where the answers are up to three decimal places (copied from Fractions)</i>
Number and place value – Rounding				round any number to the nearest 10, 100 or 1 000	round any number up to 1 000 000 to the nearest 10, 100, 1 000, 10 000 and 100 000	round any whole number to a required degree of accuracy
				<i>round decimals with one decimal place to the nearest whole number (copied from Fractions)</i>	<i>round decimals with two decimal places to the nearest whole number and to one decimal place</i>	<i>solve problems which require answers to be rounded to specified degrees of accuracy (copied from Fractions)</i>

					(copied from Fractions)	
Number and place value – Problem solving		use place value and number facts to solve problems	solve number problems and practical problems involving these ideas.	solve number and practical problems that involve all of the above and with increasingly large positive numbers	solve number problems and practical problems that involve all of the above	solve number and practical problems that involve all of the above
Addition and subtraction - Number bonds	represent and use number bonds and related subtraction facts within 20	recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100				
Addition and subtraction – Mental calculations	add and subtract one-digit and two-digit numbers to 20, including zero	add and subtract numbers using concrete objects, pictorial representations, and mentally, including: a two-digit number and ones a two-digit number and tens two two-digit numbers adding three one-digit numbers	add and subtract numbers mentally, including: a three-digit number and ones a three-digit number and tens a three-digit number and hundreds		add and subtract numbers mentally with increasingly large numbers	perform mental calculations, including with mixed operations and large numbers

	read, write and interpret mathematical statements involving addition (+), subtraction (-) and equals (=) signs (appears also in Written Methods)	show that addition of two numbers can be done in any order (commutative) and subtraction of one number from another cannot				use their knowledge of the order of operations to carry out calculations involving the four operations
Addition and subtraction –Written methods	read, write and interpret mathematical statements involving addition (+), subtraction (-) and equals (=) signs (appears also in Mental Calculation)		add and subtract numbers with up to three digits, using formal written methods of columnar addition and subtraction	add and subtract numbers with up to 4 digits using the formal written methods of columnar addition and subtraction where appropriate	add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction)	
Addition and subtraction – Inverse operations, estimating and checking answers		recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems.	estimate the answer to a calculation and use inverse operations to check answers	estimate and use inverse operations to check answers to a calculation	use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy	use estimation to check answers to calculations and determine, in the context of a problem, levels of accuracy.
Addition and subtraction – Problem solving	solve one-step problems that involve addition and subtraction, using concrete	solve problems with addition and subtraction: using concrete objects and	solve problems, including missing number problems, using number facts, place value, and	solve addition and subtraction two-step problems in contexts, deciding which	solve addition and subtraction multi-step problems in contexts, deciding	solve addition and subtraction multi-step problems in contexts, deciding

	objects and pictorial representations, and missing number problems such as $7 = \square - 9$	pictorial representations, including those involving numbers, quantities and measures applying their increasing knowledge of mental and written methods	more complex addition and subtraction	operations and methods to use and why	which operations and methods to use and why	which operations and methods to use and why
		<i>solve simple problems in a practical context involving addition and subtraction of money of the same unit, including giving change (copied from Measurement)</i>				Solve problems involving addition, subtraction, multiplication and division
Multiplication and division - Facts	<i>count in multiples of twos, fives and tens (copied from Number and Place Value)</i>	<i>count in steps of 2, 3, and 5 from 0, and in tens from any number, forward or backward (copied from Number and Place Value)</i>	<i>count from 0 in multiples of 4, 8, 50 and 100 (copied from Number and Place Value)</i>	<i>count in multiples of 6, 7, 9, 25 and 1 000 (copied from Number and Place Value)</i>	<i>count forwards or backwards in steps of powers of 10 for any given number up to 1 000 000 (copied from Number and Place Value)</i>	
		recall and use multiplication and division facts for the 2, 5 and 10	recall and use multiplication and division facts for the 3, 4 and 8	recall multiplication and division facts for multiplication tables up to 12×12		

		multiplication tables, including recognising odd and even numbers	multiplication tables			
Multiplication and division – Mental calculation Multiplication and division – Written calculation			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 (appears also in Written Methods)	use place value, known and derived facts to multiply and divide mentally, including: multiplying by 0 and 1; dividing by 1; multiplying together three numbers	multiply and divide numbers mentally drawing upon known facts	perform mental calculations, including with mixed operations and large numbers
		show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot		recognise and use factor pairs and commutativity in mental calculations (appears also in Properties of Numbers)	multiply and divide whole numbers and those involving decimals by 10, 100 and 1000	<i>associate a fraction with division and calculate decimal fraction equivalents (e.g. 0.375) for a simple fraction (e.g. $\frac{3}{8}$)</i> (copied from Fractions)
		calculate mathematical statements for	write and calculate mathematical statements for	multiply two-digit and three-digit numbers by a	multiply numbers up to 4 digits by a one- or two-digit	multiply multi-digit numbers up to 4 digits by a two-digit

		<p>multiplication and division within the multiplication tables and write them using the multiplication (\times), division (\div) and equals (=) signs</p>	<p>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 (appears also in Mental Methods)</p>	<p>one-digit number using formal written layout</p>	<p>number using a formal written method, including long multiplication for two-digit numbers</p>	<p>whole number using the formal written method of long multiplication</p>
					<p>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>	<p>divide numbers up to 4-digits by a two-digit whole number using the formal written method of short division where appropriate for the context divide numbers up to 4 digits by a two-digit whole number using the formal written method of long division, and interpret remainders as whole number remainders, fractions, or by</p>

						rounding, as appropriate for the context
						<i>use written division methods in cases where the answer has up to two decimal places (copied from Fractions (including decimals))</i>
Multiplication and division – Multiples, factors, primes, square and cube numbers				recognise and use factor pairs and commutativity in mental calculations (repeated)	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	
					recognise and use square numbers and cube numbers, and the notation for squared (2) and cubed (3)	<i>calculate, estimate and compare volume of cubes and cuboids using standard units, including centimetre cubed (cm^3) and cubic metres (m^3), and extending to other units such as mm^3 and km^3</i> (copied from Measures)
Multiplication and division – Order of operations						use their knowledge of the order of operations to carry out calculations involving the four operations
Multiplication and division – Estimating and checking answers			<i>estimate the answer to a calculation and use inverse operations to check answers</i> (copied from Addition and Subtraction)	<i>estimate and use inverse operations to check answers to a calculation</i> (copied from Addition and Subtraction)		use estimation to check answers to calculations and determine, in the context of a problem, levels of accuracy

Multiplication and division – Problem solving	solve one-step problems involving multiplication and division, by calculating the answer using concrete objects, pictorial representations and arrays with the support of the teacher	solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts	solve problems, including missing number problems, involving multiplication and division, including positive integer scaling problems and correspondence problems in which 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 are 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 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	<i>solve problems involving similar shapes where the scale factor is known or can be found</i> (copied from Ratio and Proportion)
Fractions (including decimals and percentages) – Counting in		<i>Pupils should count in fractions up to 10, starting from any number and using the $\frac{1}{2}$ and $\frac{2}{4}$ equivalence on</i>	count up and down in tenths	count up and down in hundredths		

fractional steps		<i>the number line (Non Statutory Guidance)</i>				
Fractions (including decimals and percentages) – Recognising fractions	recognise, find and name a half as one of two equal parts of an object, shape or quantity	recognise, find, name and write fractions $\frac{1}{3}$, $\frac{1}{4}$, $\frac{2}{4}$ and $\frac{3}{4}$ of a length, shape, set of objects or quantity	recognise, find and write fractions of a discrete set of objects: unit fractions and non-unit fractions with small denominators	recognise that hundredths arise when dividing an object by one hundred and dividing tenths by ten	recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents (appears also in Equivalence)	
			recognise that tenths arise from dividing an object into 10 equal parts and in dividing one – digit numbers or quantities by 10.			
	recognise, find and name a quarter as one of four equal parts of an object, shape or quantity		recognise and use fractions as numbers: unit fractions and non-unit fractions with small denominators			
Fractions (including decimals and percentages) – Comparing fractions			compare and order unit fractions, and fractions with the same denominators		compare and order fractions whose denominators are all multiples of the same number	compare and order fractions, including fractions >1

Fractions (including decimals and percentages) – Comparing decimals				compare numbers with the same number of decimal places up to two decimal places	read, write, order and compare numbers with up to three decimal places	identify the value of each digit in numbers given to three decimal places
Fractions (including decimals and percentages) – Rounding				round decimals with one decimal place to the nearest whole number	round decimals with two decimal places to the nearest whole number and to one decimal place	solve problems which require answers to be rounded to specified degrees of accuracy
Fractions (including decimals and percentages) – Equivalence		write simple fractions e.g. $\frac{1}{2}$ of 6 = 3 and recognise the equivalence of $\frac{2}{4}$ and $\frac{1}{2}$.	recognise and show, using diagrams, equivalent fractions with small denominators	recognise and show, using diagrams, families of common equivalent fractions	identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths	use common factors to simplify fractions; use common multiples to express fractions in the same denomination
				recognise and write decimal equivalents of any number of tenths or hundredths	read and write decimal numbers as fractions (e.g. 0.71 = $\frac{71}{100}$) recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents	associate a fraction with division and calculate decimal fraction equivalents (e.g. 0.375) for a simple fraction (e.g. $\frac{3}{8}$)

				recognise and write decimal equivalents to $\frac{1}{4}$, $\frac{1}{2}$, $\frac{3}{4}$	recognise the per cent symbol (%) and understand that per cent relates to “number of parts per hundred”, and write percentages as a fraction with denominator 100 as a decimal fraction	recall and use equivalences between simple fractions, decimals and percentages, including in different contexts.
Fractions (including decimals and percentages) – Addition and subtraction of fractions			add and subtract fractions with the same denominator within one whole (e.g. $\frac{5}{7} + \frac{1}{7} = \frac{6}{7}$)	add and subtract fractions with the same denominator	add and subtract fractions with the same denominator and multiples of the same number	add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions
					recognise mixed numbers and improper fractions and convert from one form to the other and write mathematical statements > 1 as a mixed number (e.g. $\frac{2}{5} + \frac{4}{5} = \frac{6}{5} = 1\frac{1}{5}$)	
Fractions (including decimals and percentages) – Multiplicatio					multiply proper fractions and mixed numbers by whole numbers, supported by	multiply simple pairs of proper fractions, writing the answer in its simplest form (e.g. $\frac{1}{4} \times \frac{1}{2} = \frac{1}{8}$)

n and division of fractions					materials and diagrams	multiply one-digit numbers with up to two decimal places by whole numbers
						divide proper fractions by whole numbers (e.g. $\frac{1}{3} \div 2 = \frac{1}{6}$)
Fractions (including decimals and percentages) – Multiplication and division of decimals						multiply one-digit numbers with up to two decimal places by whole numbers
				find the effect of dividing a one- or two-digit number by 10 and 100, identifying the value of the digits in the answer as ones, tenths and hundredths		multiply and divide numbers by 10, 100 and 1000 where the answers are up to three decimal places
						identify the value of each digit to three decimal places and multiply and divide numbers by 10, 100 and 1000 where the answers are up

						to three decimal places
						associate a fraction with division and calculate decimal fraction equivalents (e.g. 0.375) for a simple fraction (e.g. $\frac{3}{8}$)
						use written division methods in cases where the answer has up to two decimal places
Fractions (including decimals and percentages) – Problem solving			solve problems that involve all of the above	solve problems involving increasingly harder fractions to calculate quantities, and fractions to divide quantities, including non-unit fractions where the answer is a whole number	solve problems involving numbers up to three decimal places	
				solve simple measure and money problems involving fractions and decimals to two decimal places.	solve problems which require knowing percentage and decimal equivalents of $\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{5}$, $\frac{2}{5}$, $\frac{4}{5}$	

					and those with a denominator of a multiple of 10 or 25.	
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 - Equations	<i>solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as $7 = \square - 9$ (copied from Addition and Subtraction)</i>	<i>recognise and use the inverse relationship between addition and subtraction and use this to check calculations and missing number problems. (copied from Addition and Subtraction)</i>	<i>solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction. (copied from Addition and Subtraction)</i>		<i>use the properties of rectangles to deduce related facts and find missing lengths and angles (copied from Geometry: Properties of Shapes)</i>	express missing number problems algebraically
			<i>solve problems, including missing number problems, involving multiplication and division, including integer scaling (copied from Multiplication and Division)</i>			
		<i>recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100</i>				find pairs of numbers that satisfy number sentences involving two unknowns

		(copied from Addition and Subtraction)				
	<i>represent and use number bonds and related subtraction facts within 20</i> (copied from Addition and Subtraction)					enumerate all possibilities of combinations of two variables
Algebra - Formulae				<i>Perimeter can be expressed algebraically as $2(a + b)$ where a and b are the dimensions in the same unit.</i> (Copied from NSG measurement)		use simple formulae <i>recognise when it is possible to use formulae for area and volume of shapes</i> (copied from Measurement)
Algebra - Sequences	<i>sequence events in chronological order using language such as: before and after, next, first, today, yesterday, tomorrow, morning, afternoon and evening</i> (copied from Measurement)	<i>compare and sequence intervals of time</i> (copied from Measurement) <i>order and arrange combinations of mathematical objects in patterns</i>				generate and describe linear number sequences

		(copied from Geometry: position and direction)				
Measurement – Comparing and estimating	compare, describe and solve practical problems for: lengths and heights [e.g. long/short, longer/shorter, tall/short, double/half] mass/weight [e.g. heavy/light, heavier than, lighter than] capacity and volume [e.g. full/empty, more than, less than, half, half full, quarter] time [e.g. quicker, slower, earlier, later]	compare and order lengths, mass, volume/capacity and record the results using >, < and =		estimate, compare and calculate different measures, including money in pounds and pence (also included in Measuring)	calculate and compare the area of squares and rectangles including using standard units, square centimetres (cm ²) and square metres (m ²) and estimate the area of irregular shapes (also included in measuring)	calculate, estimate and compare volume of cubes and cuboids using standard units, including centimetre cubed (cm ³) and cubic metres (m ³), and extending to other units such as mm ³ and km ³ .
	sequence events in chronological order using language [e.g. before and after, next, first, today, yesterday, tomorrow, morning, afternoon and evening]	compare and sequence intervals of time	compare durations of events, for example to calculate the time taken by particular events or tasks		estimate volume (e.g. using 1 cm ³ blocks to build cubes and cuboids) and capacity (e.g. using water)	

			estimate and read time with increasing accuracy to the nearest minute; record and compare time in terms of seconds, minutes, hours and o'clock; use vocabulary such as a.m./p.m., morning, afternoon, noon and midnight (appears also in Telling the Time)			
Measurement – Measuring and calculating	measure and begin to record the following: lengths and heights mass/weight capacity and volume time (hours, minutes, seconds)	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)	estimate, compare and calculate different measures , including money in pounds and pence (appears also in Comparing)	use all four operations to solve problems involving measure (e.g. length, mass, volume, money) using decimal notation including scaling.	solve problems involving the calculation and conversion of units of measure , using decimal notation up to three decimal places where appropriate (appears also in Converting)

			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
Measurement – Measuring and calculating	recognise and know the value of different denominations of coins and notes	recognise and use symbols for pounds (£) and pence (p); combine amounts to make a particular value	add and subtract amounts of money to give change, using both £ and p in practical contexts			
		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				
				find the area of rectilinear shapes by counting squares	calculate and compare the area of squares and rectangles including using standard units, square	calculate the area of parallelograms and triangles calculate, estimate and compare

					centimetres (cm ²) and square metres (m ²) and estimate the area of irregular shapes <i>recognise and use square numbers and cube numbers, and the notation for squared (²) and cubed (³)</i> (copied from Multiplication and Division)	volume of cubes and cuboids using standard units, including cubic centimetres (cm ³) and cubic metres (m ³), and extending to other units [e.g. mm ³ and km ³].
	tell the time to the hour and half past the hour and draw the hands on a clock face to show these times.	tell and write the time to five minutes, including quarter past/to the hour and draw the hands on a clock face to show these times.	tell and write the time from an analogue clock, including using Roman numerals from I to XII, and 12-hour and 24-hour clocks	read, write and convert time between analogue and digital 12 and 24-hour clocks (appears also in Converting)		recognise when it is possible to use formulae for area and volume of shapes
	recognise and use language relating to dates, including days of the week, weeks, months and years	know the number of minutes in an hour and the number of hours in a day. (appears also in Converting)	estimate and read time with increasing accuracy to the nearest minute; record and compare time in terms of seconds, minutes, hours and o'clock; use vocabulary such as			

			a.m./p.m., morning, afternoon, noon and midnight (appears also in Comparing and Estimating)			
				solve problems involving converting from hours to minutes; minutes to seconds; years to months; weeks to days (appears also in Converting)	solve problems involving converting between units of time	
Measurement – Converting		know the number of minutes in an hour and the number of hours in a day. (appears also in Telling the Time)	know the number of seconds in a minute and the number of days in each month, year and leap year	convert between different units of measure (e.g. kilometre to metre; hour to minute)	convert between different units of metric measure (e.g. kilometre and metre; centimetre and metre; centimetre and millimetre; gram and kilogram; litre and millilitre)	use, read, write and convert between standard units, converting measurements of length, mass, volume and time from a smaller unit of measure to a larger unit, and vice versa, using decimal notation to up to three decimal places
				read, write and convert time	solve problems involving	solve problems involving the

				between analogue and digital 12 and 24-hour clocks (appears also in Converting)	converting between units of time	calculation and conversion of units of measure, using decimal notation up to three decimal places where appropriate (appears also in Measuring and Calculating)
				solve problems involving converting from hours to minutes; minutes to seconds; years to months; weeks to days (appears also in Telling the Time)	understand and use equivalences between metric units and common imperial units such as inches, pounds and pints	convert between miles and kilometres
Properties of shape – Identifying shapes and their properties	recognise and name common 2-D and 3-D shapes, including: 2-D shapes [e.g. rectangles (including squares), circles and triangles] 3-D shapes [e.g. cuboids (including cubes), pyramids and spheres].	identify and describe the properties of 2-D shapes, including the number of sides and line symmetry in a vertical line		identify lines of symmetry in 2-D shapes presented in different orientations	identify 3-D shapes, including cubes and other cuboids, from 2-D representations	recognise, describe and build simple 3-D shapes, including making nets (appears also in Drawing and Constructing)
		identify and describe the properties of 3-D shapes, including the number of				illustrate and name parts of circles, including radius, diameter and circumference and

		edges, vertices and faces				know that the diameter is twice the radius
		identify 2-D shapes on the surface of 3-D shapes, [for example, a circle on a cylinder and a triangle on a pyramid]				
Properties of shape – Drawing and constructing			draw 2-D shapes and make 3-D shapes using modelling materials; recognise 3-D shapes in different orientations and describe them	complete a simple symmetric figure with respect to a specific line of symmetry	draw given angles, and measure them in degrees (°)	draw 2-D shapes using given dimensions and angles
						recognise, describe and build simple 3-D shapes, including making nets (appears also in Identifying Shapes and Their Properties)
Properties of shape – Comparing and classifying		compare and sort common 2-D and 3-D shapes and everyday objects		compare and classify geometric shapes, including quadrilaterals and triangles, based on their properties and sizes	use the properties of rectangles to deduce related facts and find missing lengths and angles	compare and classify geometric shapes based on their properties and sizes and find unknown angles in any triangles, quadrilaterals, and regular polygons
					distinguish between regular and irregular polygons based on	

					reasoning about equal sides and angles	
Properties of shape – Angles			recognise angles as a property of shape or a description of a turn		know angles are measured in degrees: estimate and compare acute, obtuse and reflex angles	
			identify right angles, recognise that two right angles make a half-turn, three make three quarters of a turn and four a complete turn; identify whether angles are greater than or less than a right angle	identify acute and obtuse angles and compare and order angles up to two right angles by size	identify: angles at a point and one whole turn (total 360°) angles at a point on a straight line and $\frac{1}{2}$ a turn (total 180°) other multiples of 90°	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			
Position and direction - Position, direction and movement	describe position, direction and movement, including half,	use mathematical vocabulary to describe position, direction and movement		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	describe positions on the full coordinate grid (all four quadrants)

	quarter and three-quarter turns.	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	translation, using the appropriate language, and know that the shape has not changed	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		
Position and direction - Pattern		order and arrange combinations of mathematical objects in patterns and sequences				
Statistics – Interpreting, constructing and presenting data		interpret and construct simple pictograms, tally charts, block diagrams and simple tables	interpret and present data using bar charts, pictograms and tables	interpret and present discrete and continuous data using appropriate graphical methods, including bar charts and time graphs	complete, read and interpret information in tables, including timetables	interpret and construct pie charts and line graphs and use these to solve problems
		ask and answer simple questions by counting the				

		number of objects in each category and sorting the categories by quantity				
		ask and answer questions about totalling and comparing categorical data				
Statistics – Solving problems			solve one-step and two-step questions [e.g. ‘How many more?’ and ‘How many fewer?’] using information presented in scaled bar charts and pictograms and tables.	solve comparison, sum and difference problems using information presented in bar charts, pictograms, tables and other graphs.	solve comparison, sum and difference problems using information presented in a line graph	calculate and interpret the mean as an average

Mathematics vocabulary for Year 1							
Number and place value	Addition and subtraction	Multiplication and division	Measure	Geometry (position and direction)	Geometry (properties of shape)	Fractions	General/problem solving
Number Zero, one, two, three to twenty, and beyond	Number bonds, number line	Odd, even Count in twos, threes, fives	Full, half full, empty Holds	Position Over, under, underneath, above, below,	Group, sort Cube, cuboid, pyramid, sphere, cone,	Whole Equal parts, four equal parts	Listen, join in Say, think, imagine, remember

None	Add, more, plus, make, sum, total, altogether, combine	Count in tens (forwards from/backwards from)	Container	top, bottom, side	cylinder, circle, triangle, square	One half, two halves	Start from, start with, start at
Count (on/up/to/from/down)	Inverse	How many times?	Weigh, weighs, balances	On, in, outside, inside	Shape	A quarter, two quarters	Look at, point to
Before, after	Double, near double	Lots of, groups of	Heavy, heavier, heaviest, light, lighter, lightest	Around, in front, behind	Flat, curved, straight, round		Put, place, fit
More, less, many, few, fewer, least, fewest, smallest, greater, lesser	Half, halve	Once, twice, three times, five times	Scales	Front, back	Hollow, solid		Arrange, rearrange
Equal to, the same as	Equals, is the same as (including equals sign)	Multiply, multiply by	Time Days of the week: Monday, Tuesday, etc.	Before, after	Corner (point, pointed)		Change, change over
Odd, even	Difference between	Repeated addition	Seasons: spring, summer, autumn, winter	Beside, next to, opposite	Face, side, edge		Split, separate
Pair	How many more to make..?, how many more is...than..?, how much more is..?	Array, row, column	Day, week, month, year, weekend	Apart	Make, build, draw		Carry on, continue, repeat, what comes next?
Units, ones, tens		Double, halve	Birthday, holiday	Between, middle, edge, centre			Find, choose, collect, use, make, build
Ten more/less		Share, share equally	Morning, afternoon, evening, night, midnight	Corner			Tell me, describe, pick out, talk about, explain, show me
Digit		Group in pairs, threes, etc.		Direction			Read, write, record, trace, copy, complete, finish, end
Numeral	Subtract, take away, minus	Equal groups of		Journey			Fill in, shade, colour, tick, cross, draw, draw a line
Compare	How many fewer is...than..?,	Divide, divided by, left, left over		Left, right, up, down, forwards, backwards, sideways			
(In) order/a different order				Across			

Size	how much less is..?		Bedtime, dinnertime, playtime	Close, far, near			between, join (up), ring, arrow
Value	Partition		Today, yesterday, tomorrow	Along, through			Cost
Between, halfway between			Before, after	To, from, towards, away from			Count, work out, answer, check same number(s)/different number(s)/missing number(s)
Above, below			Next, last	Movement			Number facts, number line, number track, number square, number cards
			Now, soon, early, late	Slide, roll, turn, whole turn, half turn			Abacus, counters, cubes, blocks, rods, die, dice, dominoes, pegs, peg board
			Quick, quicker, quickest, quickly, fast, faster, fastest, slow, slower, slowest, slowly	Stretch, bend			Same way, different way, best way, another way
			Old, older, oldest, new, newer, newest				In order, in a different order
			Takes longer, takes less time				Not all, every, each

			<p>Hour, o'clock, half past</p> <p>Clock, watch, hands</p> <p>How long ago?, how long will it be to...?, how long will it take to...?, how often?</p> <p>Always, never, often, sometimes, usually</p> <p>Once, twice</p> <p>First, second, third, etc.</p> <p>Estimate, close to, about the same as, just over, just under</p> <p>Too many, too few, not enough, enough</p>				
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			<p>Length, width, height, depth</p> <p>Long, longer, longest, short, shorter shortest, tall, taller, tallest, high, higher, highest</p> <p>Low, wide, narrow, deep, shallow, thick, thin</p> <p>Far, near, close</p> <p>Metre, ruler, metre stick</p> <p>Money, coin, penny, pence, pound, price, cost, buy, sell, spend, spent, pay, change, dear(er), costs more, costs less, cheaper, costs the same as</p>				
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			How much?, how many?				
			Total				

Mathematics vocabulary for Year 2						
Number and place value	Measure	Geometry (position and direction)	Geometry (properties of shape)	Fractions	Data/statistics	General/problem solving
Numbers to one hundred	Quarter past/to	Rotation	Size	Three quarters, one third, a third	Count, tally, sort	Predict
Hundreds	m/km, g/kg, ml/l	Clockwise, anticlockwise	Bigger, larger, smaller	Equivalence, equivalent	Vote	Describe the pattern, describe the rule
Partition, recombine	Temperature (degrees)	Straight line	Symmetrical, line of symmetry		Graph, block graph, pictogram	Find, find all, find different
Hundred more/less		Ninety degree turn, right angle	Fold		Represent	Investigate
			Match Mirror line, reflection		Group, set, list, table	
			Pattern, repeating pattern		Label, title Most popular, most common, least popular, least common	

	Mathematics vocabulary for Year 3
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Number and place value	Addition and subtraction	Multiplication and division	Measure	Geometry (position and direction)	Geometry (properties of shape)	Fractions	Data/statistics
Numbers to one thousand	Column addition and subtraction	Product Multiples of four, eight, fifty and one hundred Scale up	Leap year Twelve hour/twenty-four hour clock Roman numerals I to XIII	Greater/less than ninety degrees Orientation (same orientation, different orientation)	Horizontal, vertical, perpendicular and parallel lines	Numerator, denominator Unit fraction, nonunit fraction Compare and order Tenths	Chart, bar chart, frequency table, Carroll diagram, Venn diagram Axis, axes Diagram

Mathematics vocabulary for Year 4						
Number and place value	Multiplication and division	Measure	Geometry (position and direction)	Geometry (properties of shape)	Fractions	Data/statistics
Tenths, hundredths Decimal (places) Round (to nearest) Thousand more/less than Negative integers	Multiplication facts (up to 12x12) Division facts Inverse Derive Dividend, divisor, short division	Convert	Coordinates Translation Quadrant x-axis, y-axis Perimeter and area	Quadrilaterals Triangles Right angle, acute and obtuse angles	Equivalent decimals and fractions	Continuous data Line graph

Count through zero Roman numerals (I to C)	Bus shelter					
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Mathematics vocabulary for Year 5						
Number and place value	Addition and subtraction	Multiplication and division	Measure	Geometry (position and direction)	Geometry (properties of shape)	Fractions, decimals and percentages
Powers of 10	Efficient written method	Factor pairs Composite numbers, prime number, prime factors, square number, cubed number Formal written method	Volume Imperial units, metric units	Reflex angle Dimensions	Regular and irregular Polygons	Proper fractions, improper fractions, mixed numbers Percentage Half, quarter, fifth, two fifths, four fifths Ratio, proportion

Mathematics vocabulary for Year 6							
Number and place value	Addition and subtraction	Multiplication and division	Geometry (position and direction)	Geometry (properties of shape)	Fractions, decimals and percentages	Algebra	Data/statistics
Numbers to ten million	Order of operations	Order of operations	Four quadrants (for coordinates)	Vertically opposite (angles)	Degree of accuracy	Linear number sequence	Mean Pie chart

		Common factors, common multiples		Circumference, radius, diameter	Simplify	Substitute Variables Symbol Known values	Construct
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