

Area of Maths	Nursery	Foundation	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Place Value	Demonstrate an understanding of numbers to 5.	Demonstrate a deep understanding of number to 10.	Demonstrate an understanding of place value using apparatus to support with numbers to 100	Recognise the PV of each digit in a 2-digit number	Recognise the PV of each digit in a 3-digit number	Recognise the PV of a 4-digit number	Recognise the PV of a 6-digit number	Recognise the PV of a 7-digit number
	Count to 5	Count up to 20. Recite 1-10 forwards and backwards beginning with 0	Count to a 100 and across 100, forwards and backwards, beginning with 0 or 1, or from any given number Count in different multiples including 1, 2, 5 and 10s. Use counting strategies to solve problems	Count in steps of 2, 3 and 5 from 0 Count in 10s from any number - forward and backward	Count from 0 in multiples of 4, 8, 50 and 100	Count in multiples of 6, 7, 9, 25 and 100 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
	Read numbers to 5 and make marks to represent numerals and objects	Read and write numbers to 10	Read and write numbers from 1 - 20 in numerals and words Read numbers from 0 - 100 in numerals Write numbers from 1 - 100 in numerals	Read and write numbers to at least 100 in numerals and words	Read and write numbers up to 1000 in numbers and words	Read Roman numerals to 100	Read, write, order and compare numbers to at least 1,000,000 and determine the value of each digit Read roman numeral to 1000 (M) and recognise years written in Roman numerals	Read, write, order and compare numbers up to 10,000,000 and determine the value of each digit
		Say a number that is 1 less within 10 Say a number that is 1 more within 10	Say the number that is 1 less than any given number Say the number that is 1 more than any given number		Find 10 or 100 more than a given number Find 10 or 100 less than a given number	Find 1000 more Find 1000 less	Count forwards or backwards in steps of powers of 10 for any given number up to 1,000,000	
			Use concrete object and pictorial representations and missing number problems e.g. $7 = \dots - 9$	Compare and order number from 0 - 100. Use < , > and = Partition numbers in different ways TU Begin to understand 0 as a place holder	Compare and order numbers up to 1000 Partition larger numbers to 1000 in different ways	Order and compare numbers beyond 1000		
	Compare 2 groups of objects saying which is more and less.	Compare quantities up to ten saying if one quantity is greater than, less than or the same as the other quantity.	Estimate a number of objects that can be checked by counting Identify and represent numbers using objects and pictorial representations	Identify, represent and estimate numbers using different representations, including a number line Introduce larger number > 100 and represent in different ways	Identify, represent and estimate numbers	Identify, represent and estimate numbers using different representations		

			including the number line, and use the language of: equal to, more than, less than, (fewer), most, least					
						Round any number to the nearest 10, 100 and 1000	Round any number up to 1,000,000 to the nearest 10, 100, 1000, 10,000 and 100,000	Round any whole number to a required degree of accuracy
				Use PV and number facts to solve problems with numbers to at least 100 Solve number problems that emphasise the value of each digit in 2 digit numbers	Solve number and practical problems involving number and place value	Solve number and practical problems that involve all the above and with increasingly larger numbers	Solve number problems and practical problems that involve all of the above Solve number problems and practical problems with numbers to 1,000,000 in context including measurement	Solve number problems and practical problems with numbers to 10,000,000 in context including measurement Solve problems involving all four operations
Addition and Subtraction	Explore number bonds to 5 through singing, pictures and objects.	Explore number bonds to 10 using a different representations- including subtraction facts.	Represent and use number bonds and related subtraction facts within 20 Memorise and reason with number bonds to 10 and 20 in several forms	Recall and use + and - facts to 20 fluently Derive and use related facts: $3 + 7 = 10$, $10 - 7 = 3$, $30 + 70 = 100$ etc				
			Read, write and interpret mathematical statements for + - = TU + U to 20 including 0 TU - U to 20, including 0 TU + U, TU + T, TU - U and TU - T, where no re-grouping is required, they can demonstrate their method using concrete apparatus or pictorial representation	Show that + of two numbers can be done in any order and that - cannot Extend the language of + and - to include sum and difference Solve problems using + and -. Use concrete objects, pictorial representation, quantities and measures. Mental and written methods Record + and - in columns to support PV and prepare for formal written methods with larger numbers	Add numbers up to 3 digits using columnar addition Subtract numbers up to 3 digits using columnar method	Add numbers with up to 4 digits using columnar method Subtract numbers with up to 4 digits using columnar method	Add whole numbers with more than 4 digits including using formal written methods (columnar) Subtract numbers with more than 4 digits including using formal written methods (columnar)	Use formal methods to solve multi-step problems

				TU + TU numbers within 100, demonstrate method using concrete apparatus or pictorial representations				
				<p>Add numbers mentally: TU + U, TU + T, TU + TU, U + U + U</p> <p>Subtract numbers mentally - TU - U, TU - T, TU - TU</p> <p>Subtract mentally TU - TU when there is no re-grouping required</p>	<p>Add numbers mentally: HTU + U, HTU + T, HTU + H</p> <p>Subtract numbers mentally: HTU - U, HTU - T, HTU - H</p> <p>Solve mental addition of TU + TU where answer >100</p>	Continue to practise mental methods with larger numbers	<p>Add numbers mentally with increasingly large numbers 12,462 + 2300</p> <p>Subtract numbers mentally with increasingly large numbers 12,462 - 2300</p>	<p>Perform mental calculations including mixed operations and large numbers</p> <p>Calculate mentally using efficient strategies such as manipulating expression using commutative and distributive properties to simplify the calculations</p>
				<p>Recognise and use the inverse relationship between + and - and use to check calculations</p> <p>Use estimation to check that answers to a calculation are reasonable.</p>	Estimate the answer to a calculation and use inverse to check	Estimate and use inverse operations to check calculations	Use rounding to check answer to calculations and determine, in the context of a problem, levels of accuracy	Use estimation to check answers to calculation and determine, in the context of a problem, an appropriate degree of accuracy
	Solve simple problems in practical activities.	<p>Solve one step problems involving adding (include the terms: put together, add, altogether, total, more than) in the context of numbers, measures or money, for example to 'pay' and 'give change'</p> <p>Solve one step problems involving subtracting (include the terms: take away, distance between, difference between, less than) in the context of numbers, measures or money, for example to 'pay' and '</p>	Solve missing number problems	Solve problems including missing numbers, using number facts, PV and more complex + and -	Solve + and - two step problems deciding operation	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.	

			Recognise that addition can be done in any order (practical/oral)					
Multiplication and division		Recall double facts to 10. Explore halving through practical activities.	Recall the double for all numbers to at least 10 Recall halves to 20	Recognise odd and even numbers Relate 2 x table to doubling and halving Recall and use multiplication facts for 2, 5 and 10 Recall and use division facts for 2, 5 and 10 Calculate mathematical statements for x (within 2, 5 and 10) and write them using x and = sign Show that multiplication can be done in any order and ÷ cannot	Through doubling connect 2, 4 and 8 x tables Recall and use x facts for 3, 4 and 8 x table Recall and use ÷ facts for the 3, 4 and 8 x tables Use commutativity (x done in any order) Use x and ÷ facts to derive related facts	Recall x facts up to 12 x 12 Recall ÷ facts up to 12 x 12 Use PV to x and ÷ mentally (Understand x 1,0 and ÷1)		Use knowledge of the order of operations to carry out calculations involving the four operations
				<i>Solve problems involving x and ÷, using materials, arrays, repeated +, mental methods, facts - in context</i> <i>Calculate mathematical statements for ÷ (within 2, 5 and 10) and write them using the ÷ and = sign</i>	<i>Write and calculate statements for x including TU x U. Mental to written</i> <i>Write and calculate statements for ÷ including TU ÷ U. Mental to written</i>	<i>Extend mental methods for x (600 ÷ 3 = 200, 6 ÷ 3 = 2)</i>	<i>Multiply and divide numbers mentally drawing upon known facts</i>	<i>Perform mental calculations including mixed operations and large numbers</i> <i>Calculate mentally using efficient strategies such as manipulating expression using commutative and distributive properties to simplify the calculations</i>
	<i>Explore sharing using objects and toys</i>	Explore sharing using objects and quantities to 10				Short multiplication TU x U and HTU x U using formal written layout Short division HTU ÷ U Multiply 3 numbers together	ThHTU x U or ThHTU x TU using a formal written method including long multiplication ThHTU ÷ U, using the formal written method of short division and interpret remainders appropriately for the context	Multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication Divide numbers up to 4 digits by a two-digit

								<p>whole number using the formal written methods of long division and interpret remainders as whole number remainders, fractions, or by rounding as appropriate for the context.</p> <p>Divide numbers up to 4 digits by a two-digit number using the formal written method of short division where appropriate, interpreting the remainders according to the context</p> <p>Use written division methods in cases where the answer has up to two decimal places</p>
						Recognise and use factor pairs and commutativity in mental calculations	<p>Identify multiples and factors, including finding all factors pairs of number and common factors of two numbers</p> <p>Know and use vocabulary of prime numbers, prime factors and composite (non-prime) numbers</p> <p>Establish whether a number up to 100 is prime and recall prime numbers up to 19</p> <p>Recognise and use square numbers and cube numbers and the notation for squared ² and cubed ³</p>	Identify common factors, common multiples and prime numbers
							Multiply whole numbers and those involving decimals by 10, 100 and 1000	Identify the value of each digit in numbers given to three decimal places and multiply

							Divide whole numbers and those involving decimals by 10, 100 and 1000	and divide numbers by 10, 100 and 1000 giving answers up to three decimal places
	Solve simple problems in practical activities.	<i>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</i>		<i>Solve problems including \times and \div, including scaling and correspondence problems.</i> <i>Solve simple all four operation problems in contexts, deciding which operation to use</i>	<i>Solve problems involving $+$ and \times, TU \times U, scaling and correspondence problems</i>	<i>Solve problems involving multiplication and division including using their knowledge of factors and multiples, squares and cubes</i> <i>Solve problems involving all operations and a combination of these, including understanding the meaning of the equal sign</i>	Solve problems involving all four operations	
Fractions		Recognise, find and name a half as one of two equal parts of an object/shape or quantity Recognise, find and name a quarter as one of four equal parts of an object, shape or quantity	Recognise, find, name and write fractions $\frac{1}{3}$, $\frac{1}{4}$, $\frac{2}{4}$, $\frac{3}{4}$ of a length, shape, set of objects or quantities. Know that all parts must be equal Write simple fractions. E.g. $\frac{1}{2}$ of 6 = 3	Count and down in tenths Understand that tenths arise from $\div 10$ Connect 10ths to PV, decimal measures and $\div 10$ Recognise and use fractions as numbers - unit and non-unit Recognise, find and write fractions of a set of objects	Count and down in 100ths Recognise 100ths \div 100 and 10ths \div 10	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. $\frac{2}{5} + \frac{4}{5} = \frac{6}{5} = 1 \frac{1}{5}$)		
				Compare and order unit fractions Compare and order fractions with the same denominators		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	
				Recognise equivalence $\frac{2}{4} = \frac{1}{2}$	Recognise and show, using diagrams, equivalent fractions with small denominator	Recognise and show using diagrams, families of equivalent fractions	Identify, name and write equivalent fractions of a given fraction, represented visually,	

							including tenths and hundredths	
					+ and - fractions with the same denominator	Add and subtract fractions with 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 fractions, writing the answer in its simplest form (for example, $1/4 \times \frac{1}{2} = 1/8$) Divide proper fractions by whole numbers ($1/3 \div 2 = 1/6$)
						Round decimals with one place to the nearest whole number Partitioning into U, t and h 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 Compare numbers with the same amount of decimal places	Round decimals with two decimal places to the nearest whole number and to one decimal place 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 Read, write, order and compare numbers with up to three decimal places	Associate a fraction with division and calculate decimal fraction equivalents [for example, 0.375] for a simple fraction [for example 3/8] Multiply one-digit numbers with up to two decimal places by whole numbers
						Recognise and write decimal equivalents of 10ths and 100ths Recognise and write decimal equivalents for $\frac{1}{4}$, $\frac{1}{2}$ and $\frac{3}{4}$	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, and as a decimal	Recognise the relationship between, fractions, decimals and percentages. Express them as equivalent quantities Calculate using fractions, decimals and percentages
				Solve fraction problems using shapes, objects and quantities	Solve problems including fractions	Solve problems involving harder fractions to calculate quantities and	Solve problems involving number up to three decimal places	Solve problems which require answers to be rounded to specified

						fractions to divide quantities, including non- unit where the answer is a whole number Solve simple measure and money problems involving fractions and decimals up to 2dp	Solve problems which require knowing percentage and decimal equivalents of $\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{5}$, $\frac{2}{5}$ and $\frac{4}{5}$, and those fractions with a denominator of a multiple of 10 or 25.	degrees of accuracy Link to fractions.
Ratio and proportion					Solve problems including \times and \div , including scaling and correspondence problems.	Solve problems involving $+$ and \times , TU \times U, scaling and correspondence problems	Solve problems involving multiplication and division, including scaling, by simple fractions and problems involving simple rates	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 and the use of percentages for comparison. Link percentages or 360° to calculating angles of pie charts Solve problems involving similar shapes where the scale factor is known or can be found Use the notation a:b to record work Solve problems involving unequal sharing and grouping, using knowledge of fractions and multiples
Algebra			Use concrete object and pictorial representations and missing number problems e.g. $7 = \dots - 9$	Solve missing number problems	Solve problems including missing numbers, using number facts, PV and more complex $+$ and $-$		Recognise and describe linear number sequences E.g. $3, 3\frac{1}{2}, 4, 4\frac{1}{2} \dots$ and find the term to term rule in words, E.g. add half	<i>Use simple formulae</i> <i>Substitute values into a simple formula to solve problems</i> <i>Generate and describe linear number sequences</i>

								Express missing number problems algebraically
								Find pairs of numbers that satisfy an equation with two unknown
								Enumerate possibilities of combinations of two variables
Properties of shape	Explore 2D and 3D shapes in a range of practical activities.	Recognise 2D shapes including rectangle, square, circle and triangle in practical activities and patterns. Explore 3D shapes through play and modelling.	Recognise and name common 2D shapes including: rectangles (including squares), circles and triangles Recognise and name common 3D shapes including cuboids (including cubes), pyramids and spheres	Identify and describe the properties of 2D shapes, including the number of sides and line symmetry. Introduce the terms quadrilaterals and polygons Identify and describe the properties of 3D shapes, including number of edges, vertices and faces Identify 2D shapes on the surface of 3D shapes Compare and sort common 2D and 3D shapes and everyday objects	Draw 2D shapes (extend to symmetrical/non symmetrical) Recognise and describe 3D shapes in different orientation Make 3D shapes using modelling materials.	Compare and classify shapes, including quadrilaterals and triangles, based on properties and sizes	Identify 3-D shapes, including cubes and other cuboids, from 2-D representations Distinguish between regular and irregular polygons based on reasoning about equal sides and angles. Use the properties of rectangles to deduce related facts and find missing lengths and angles	Draw 2-D shapes using given dimensions and angles Recognise, describe and build simple 3-D shapes, including making nets Compare and classify geometric shapes based on their properties and sizes and find unknown angles in any triangles, quadrilaterals, and regular polygons Illustrate and name parts of circles, including radius, diameter and circumference and know that the diameter is twice the radius
					Recognise angles as a property of a shape or a description of a turn Identify right angles. Recognise 2 = half turn, 3 = $\frac{3}{4}$ turn and 4 = whole Identify if angles > or < than right angle	Identify acute and obtuse angles Compare and order angles	Know angles are measured in degrees: estimate and compare acute, obtuse and reflex angles Draw given angles, and measure them in degrees ° Identify: angles at a point and one whole turn (total 360°); angles at a point on a straight line	Recognise angles where they meet at a point, are on a straight line, or are vertically opposite, and use mathematical reasoning to find missing angles

							and $\frac{1}{2}$ a turn (total 180°); other multiples of 90°	
				Draw lines and shapes using a ruler	Identify horizontal, vertical, perpendicular and parallel lines	Identify lines of symmetry in 2D shapes		
						Complete a simple symmetric figure		
Position and direction	Responds to some positional language (on, under, inside)	Uses language of position and direction (in, on, inside, under, over, between, next to, through, along, behind, in front of, forwards, backwards)	Describe position, direction and movement including whole, half, quarter and three-quarter turns	Order and arrange combinations of mathematical objects in patterns and sequences Use mathematical vocabulary to describe position, direction and movement, including movement in a straight line and distinguishing between rotation as a turn and in terms of right angle for quarter, half and three-quarter turns (clockwise and anti-clockwise)		Describe co-ordinates in first quadrant Describe movement between translation - left, right, up, down Plot specific points and draw sides to complete a polygon	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 position on the full co-ordinate grid (all four quadrants) Draw and translate simple shapes on the co-ordinate plane and reflect them in the axis
Measurement	Introduce the language of measure while exploring through play (size, weight, capacity, time, and money)	Use everyday language to describe and compare objects, size, weight capacity, time and money. Solve practical problems through play	Compare, describe and solve practical problems for: •Lengths and height 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 Measure and begin to record the following: •Lengths and height •Mass/weight •Capacity and volume •Time e.g. hours, minutes and seconds	Choose and use appropriate standard units to measure length/height in any direction, mass, temperature, capacity, using rulers, scales, thermometers and measuring vessels Compare and order lengths, mass, volume/capacity and the record the results using <, > and =. Using simple multiples such as half as high, twice as long etc Read scales in divisions of 1s, 2s, 5s and 10s in a practical situation where all numbers on the scale are given	Measure, compare, + and - lengths, mass and volume Connect decimals and rounding to drawing and measuring straight lines in cm Comparison of measures to include scaling - twice as high etc	Convert between different units of measure	Convert between different units of metric measure (for example, kilometre and metre; centimetre and metre; centimetre and millimetre; gram and kilogram; litre and millilitre) Understand and use approximate equivalences between metric units and common imperial units such as inches, pounds and pints Use all four operations to solve problems involving measure [for example, 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 Convert between miles and kilometres 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

			Solve problems involving counting in the context of numbers, measures or money					
Use money in role play	Know that in the UK we use pounds and pence	Recognise and know the value of different denominations of coins and notes	Solve simple problems in practical contexts involving + and - of money, giving change Find different combinations of coins that equal the same amount Recognise and use symbols for pounds £ and pence p. Combine to make a particular value	+ and - amounts of money to give change. Use £ and p in practical activities	Estimate, compare and calculate different measures, including money in pound and pence			
				Measure the perimeter of simple 2D shapes	Measure and calculate the perimeter of a rectilinear figure in cm and m Find the area of rectilinear shapes by counting squares	Measure and calculate the perimeter of composite rectilinear shapes in centimetres and metres (E.g. $4 + 2b = 20$ for a rectangle of sides 2cm and b cm and perimeter of 20) 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 Estimate volume [for example, using 1 cm ³ blocks to build cuboids (including cubes)] and capacity [for example, using water]	Recognise that shapes with the same areas can have different perimeters and vice versa 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 Calculate the area of parallelograms and triangles Recognise when it is possible to use formulae for area and volume of shape	
Talk about my day in nursery	To know the days of the week	Sequence events in chronological order using language e.g. before, after, next,	Tell and write the time including quarter past/to the hour and draw the hours on a	Tell and write time from analogue and digital, including Roman	Read, write and convert time between analogue and digital 12- and 24-hour clocks	Solve problems involving converting between units of time		

	Use the visual timetable to talk about my nursery routine	To sequence the daily routine Use sequencing language when retelling stories and their experiences	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. Draw the hands on a clock face to show these times	clock face to show these times Know the number of minutes in an hour and the number of hours in a day Compare and sequence intervals of time	numerals, 12 and 24 hour clocks Estimate and read time to the nearest minute. Read and compare time Compare duration of events Know relationships in time - seconds in min, days in months, year and leap year	Solve problems converting from hours - minutes, minutes - seconds, years - months, weeks - days		
Statistics				Ask and answer simple questions by counting the number of objects in each category and sorting the categories by quantities Ask and answer questions about totalling and comparing categorical data	Interpret and present data using bar charts, pictograms and tables	Interpret and present discrete and continuous data	Complete, read and interpret information in tables, including timetables	Interpret and construct pie charts and line graphs and use these to solve problems Calculate and interpret the mean as an average
					Solve one step and two step questions using information presented in data	Solve comparison, sum and difference problems linked to interpreting information and data	Solve comparison, sum and difference problems using information presented in a line graph	