Maths – Place Value

	Nursery	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Counting	-Displays fast recognition of up to 3 objects, without having to count them individually ('subitising') -Recites numbers past 5 -Can say one number for each item in order: 1,2,3,4,5 -Knows that the last number reached when counting a small set of objects tells you how many there are in total ('cardinal principle')	-Counts objects, actions and sounds -Is able to subitise (recognise how many objects there are in a small group without counting) Can count beyond ten -Is able to subitise (recognise quantities without counting) up to 5 (ELG) -Can count beyond 10	-Count to and across 100, forwards and backwards, beginning with 0 or 1, or from any given number -Count 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 and backward	-Count from 0 in multiples of 4, 8, 50 and 100 -Find 10 or 100 more or less than any given number	-Count in multiples of 6, 7, 9, 25 and 1000 -Count backwards through zero to include negative numbers	-Count forwards or backwards in steps of powers of 10 for any given number up to 1,000,000 -Count forwards and backwards with positive and negative whole numbers, including through zero	
Represent	-Can show 'finger numbers' up to 5 -Can link numerals and amounts: e.g. showing the right number of objects to match the numeral, up to 5 -Is experimenting with his/her own symbols and marks as well as numerals	-Is able to link the number symbol (numeral) with its cardinal number value	-Identify and represent numbers using objects and pictorial representations -Read and write numbers to 100 in numerals -Read and write numbers from 1-20 in numerals and words	-Read and write numbers to at least 100 in numerals and words -Identify, represent and estimate numbers using different representations, including the number line	-Identify, represent and estimate numbers using different representations -Read and write numbers to 1000 in numerals and words	-Identify, represent and estimate numbers using different representations -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, write, order and compare numbers to at least 1,000,000 and determine the value of each digit -Read Roman numerals 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.

Use PV and Compare	Can compare quantities using language such as; 'more than', 'fewer than'	Is able to compare numbers Understands the 'one more than/one less than' relationship between consecutive numbers	-Given a number, identify one more and one less	-Recognise the place value of each digit in a two-digit number (tens, ones) -Compare and order numbers from 0 up to 100; use <, > and = signs	-Recognise the place value of each digit in a three-digit number (hundreds, tens and ones) -Compare and order numbers up to 1000	-Find 1000 more or less than a given number -Recognise the place value of each digit in a four-digit number (thousands, hundreds, tens and ones) -Order and compare numbers beyond 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
Problems and Rounding				-Use place value and number facts to solve problems	-Solve number problems and practical problems involving these ideas	-Round any numbers to the nearest 10, 100 or 1000 -Solve practical problems that involve all of the above and with increasingly large positive numbers	-Interpret negative numbers in context -Round any number up to 1,000,000 to the nearest 10, 100, 1000, 10,000 and 100,000 -Solve number problems and practical problems than involve all of the above	-Round any whole number to a required degree of accuracy -Use negative numbers in context, and calculate intervals across zero. -Solve number and practical problems that involve all of the above.

Maths – Addition and Subtraction

	Nursery	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Addition and Subtraction: Calculations		-Understands the 'one more than/one less than' relationship between consecutive numbers -Automatically recalls number bonds for numbers 0–5 and some to 10. -Automatically recalls (without	-Add and subtract one-digit and two-digit numbers to 20, including zero **(See VCP- A1, A2, A2a, A3; S1, S2, S3, S4)**	-Add and subtract numbers using concrete objects, pictorial representations, and mentally, including: ➢ a two-digit number and ones ➢ a two-digit number and tens	-Add and subtract numbers mentally, including: ➢ a three-digit number and ones ➢ a three-digit number and tens ➢ a three-digit number and hundreds	-Add and subtract numbers with up to 4 digits using the formal written methods of columnar addition and subtraction where appropriate **(See VCP- A7, A7b; S9)**	-Add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction) **(See VCP- A7d; S10)**	

		reference to rhymes, counting or other aids) number bonds up to 5 (including subtraction facts) and some number bonds to 10, including double facts (ELG)		➢ two two-digit numbers ➢ adding three one-digit numbers **(See VCP- A3, A3a, A4, A5, A6; S5, S6, S7)**	-Add and subtract numbers with up to three digits, using formal written methods of columnar addition and subtraction **(See VCP- A4, A5, A6; S8, S9)**		-Add and subtract numbers mentally with increasingly large numbers	
Addition and Subtraction: Problems			-Solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as 7 = □ – 9	-Solve problems with addition and subtraction: ➢ using concrete objects and pictorial representations, including those involving numbers, quantities and measures ➢ applying their increasing knowledge of mental and written methods	-Solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why	-Solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why	-Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why	-Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why **(See VCP- A7d; S10)**
Combined Operations: Addition, Subtraction, Multiplication, Division							-Solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign	-Use their knowledge of the order of operations to carry out calculations involving the four operations -Solve problems involving addition, subtraction, multiplication and division -Perform mental calculations, including with mixed operations and large numbers

Maths – Multiplication and Division

	Nursery	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Multiplication and Division: Recall and Use				-Recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers -Show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot	-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 -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 -Recognise and use factor pairs and commutativity in mental calculations	-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)	-Identify common factors, common multiples and prime numbers -Use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy

Multiplication and Division: Calculations				-Calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication (×), division (÷) and equals (=) signs **(See VCP- M2, M3; D3)**	-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 **(See VCP- M4, M5; D5, D6, D7)**	-Multiply two-digit and three-digit numbers by a one-digit number using formal written layout **(See VCP- M5a, M5b; D7)**	-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 **(See VCP- M6, M7, M8)** -Multiply and divide numbers mentally drawing upon known facts -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 **(See VCP- D8)** -Multiply and divide whole numbers and those involving decimals by 10, 100 and 1000	-Multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication **(See VCP- M8)** -Divide numbers up to 4 digits by a two-digit whole number using the formal written method of long division, and interpret remainders as whole number remainders, fractions, or by rounding, as appropriate for the context -Divide numbers up to 4 digits by a two-digit number using the formal written method of short division where appropriate, interpreting remainders according to the context **(See VCP- D9, D10)**

Multiplication and Division: Problems			-Solve one-step problems involving multiplication and division, by calculating the answer using concrete objects, pictorial representations and arrays with the support of the teacher	-Solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts	-Solve problems, including missing number problems, involving multiplication and division, including positive integer scaling problems and correspondence problems in which n objects are connected to m objects	-Solve problems involving multiplying and adding, including using the distributive law to multiply two-digit numbers by one digit, integer scaling problems and harder correspondence problems such as n objects 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 multiplication and division, including scaling by simple fractions and problems involving simple rates	
Combined Operations: Addition, Subtraction, Multiplication, Division							-Solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign	-Use their knowledge of the order of operations to carry out calculations involving the four operations -Solve problems involving addition, subtraction, multiplication and division -Perform mental calculations, including with mixed operations and large numbers

Maths – Fractions, Decimals and Percentages

	Nursery	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6

Fractions: Recognise and Write			-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; ½ ¼ 2/4 and ¾ of a length, shape, set of objects or quantity	-Count up and down in tenths; recognise that tenths arise from diviing an object into 10 equal parts and in dividing one-digit numbers or quantities by 10 -Recognise, find and write fractions of a discrete set of objects: unit fractions and non-unit fractions with small denominators -Recognise and use fractions as numbers: unit fractions and non-unit fractions with the same denominators	-Count up and down in hundredths; recognise that hundredths arise when dividing an object by one hundred and dividing tenths by ten.	-Identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths -Recognise mixed numbers and improper fractions and convert from one form to the other and write mathematical statements >1 as a mixed number, for example, 2/5 +4/5 = 6/5 = 1 and 1/5	
Fractions: Compare				-Recognise the equivalence of 2/4 and ½	-Recognise and show, using diagrams, equivalent fractions with small denominators -Compare and order unit fractions and fractions with the same denominators	-Recognise and show, using diagrams, families of common equivalent fractions	-Compare and order fractions whose denominators are all multiples of the same number	-use common factors to simplify fractions; use common multiples to express fractions in the same denomination -Compare and order fractions, including fractions >1
Fractions: Calculations				-Write simple fractions, for example, ½ of 6 = 3	-Add and subtract fractions with the same denominator within one whole, for example 5/7 + 1/7 = 6/7	-Add and subtract fractions with the same denominator	-Add and subtract fractions with the same denominator and denominators that are multiples of the same number -Multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams	-Add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions -Multiply simple pairs of proper fractions, writing the answers in its

								simplest form, for example, $\frac{1}{4} \times \frac{1}{2} =$ 1/8 -Divide proper fractions by whole numbers, for example, 1/3 ÷ 2 = 1/6
Fractions: Solve problems					-Solve problems that involve all of the above	-Solve problems involving increasingly harder fractions to calculate quantities, and fractions to divide quantities, including non-unit fractions where the answer is a whole number		
Decimals: Recognise and Write						-Recognise and write decimal equivalents of any number of tenths or hundredths -Recognise and write decimal equivalents to $\frac{1}{4}$ $\frac{1}{2}$ $\frac{3}{4}$	-Read and write decimal numbers as fractions, for example, 0.71 = 71/100 -Recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents	-Identify the value of each digit in numbers given to three decimal places
Decimals: Compare						-Round decimals with one decimal place to the nearest whole number -Compare numbers with the same number of decimal places up to two decimal places	-Round decimals with two decimal places to the nearest whole number and to one decimal place -Read, write, order and compare numbers with up to three decimal places	
Decimals: Calculations and Problems						-Find the effect of dividing a one or two digit number by 10 and 100, identifying the value of the digits in the answer	-Solve problems involving number up to three decimal places	-Multiply and divide numbers by 10, 100 and 100 giving answers up to three decimal places

						as ones, tenths and hundredths		-Multiply one-digit numbers with up to two-decimal places by whole numbers -Use written division methods in cases where the answer has up to two decimal places -Solve problems which require answers to be rounded to specified degrees of accuracy
Fractions, Decimals and Percentages						-Solve simple measure and money problems involving fractions and decimals to two decimal places	-Recognise the per cent symbol % and understand that per cent relates to 'number of parts per hundred' ad write percentages as a fraction with denominator 100, and as a decimal -Solve problems which require knowing percentage and decimal equivalents of $\frac{1}{2}$, $\frac{1}{4}$, 1/5, 2/5, 4/5 and those fractions with a denominator of a multiple of 10 or 25	-Associate a fraction with division and calculate decimal fraction equivalent, for example, 0.375 for a simple fractions, for example, 3/8 -Recall and use equivalences between simple fractions, decimals and percentage, including in different contexts

Maths - Measures

	Nursery	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6

Using measures			-Compare, describe and solve practical problems for: lengths and heights (e long/short, longer/shorter, tall/short, double/half) mass/weight (eg heavy/light, heavier than/lighter than) capacity and volume (eg full/empty, more than/less than, half, half full, quarter) time (eg quicker, lower, earlier, later) -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 (℃);capacity (litres/ml)to the nearest appropriate unit, using rulers, scales, thermometers and measuring vessels compare and order lengths, mass, volume/capacity and record the results using >, < and =	-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; centimetre and metre; centimetre and millimetre; gram and kilogram] -Estimate, compare and calculate different measures	-Convert between different units of metric measure -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 3d.p. where appropriate -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 3d.p. -Convert between miles and kilometres
Money			-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 -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	-Add and subtract amounts of money to give change, using both £ and p in practical contexts	-Estimate, compare and calculate different measures, including money in pounds and pence	-Use all four operations to solve problems involving measure[for example, money]	
Time			-Sequence events in chronological order using language [for example, beforehand	-Compare and sequence intervals of time -Tell and write the time to five minutes, including	-Tell and write the time from an analogue clock, including using Roman numerals from I	-Read, write and convert time between analogue	-Solve problems involving converting	-Use, read, write and convert between standard units, converting

			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	quarter past/to the hour and draw the hands on a clock face to show these times -Know the number of minutes in an hour and the number of hours in a day	to XII, and 12-hour and 24-hour clocks -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 -Know the number of seconds in a minute and the number of days in each month, year and leap year -Compare durations of events [for example to calculate the time taken by particular events or tasks]	and digital 12-and 24-hourclocks -Solve problems involving converting from hours to minutes; minutes to seconds; years to months; weeks todays	between units of time	measurements of time from a smaller unit of measure to a larger unit, and vice versa
Perimeter, area and volume					-Measure the perimeter of simple 2-D shapes	-Measure and calculate the perimeter of rectilinear figure(including squares) in centimetres and metres -Find the area of rectilinear shapes by counting squares	-Measure and calculate the perimeter of composite rectilinear shapes in centimetres and metres -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 -Estimate volume[for	-Recognise that shapes with the same areas can have different perimeters and vice versa -Recognise when itis possible to use formulae for area and volume of shapes -Calculate the area of parallelograms and triangles -Calculate, estimate and compare volume of cubes and cuboids using standard units, including cubic centimetres (cm3)and cubic metres(m3), and

							example, using blocks to build cuboids] and capacity [for example, using water]	extending to other units

Maths – Geometry

	Nursery	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
2D shapes	-Can talk about and explore 2D and 3D shapes (e.g. circles, rectangles, triangles and cuboids) using informal and mathematical language; 'sides', 'corners', 'straight', 'flat', 'round' -Combines shapes to make new ones; an arch, a bigger triangle etc	-Can select, rotate and manipulate shapes in order to develop spatial reasoning skills -Investigates composing and decomposing shapes and recognises a shape can have other shapes within it, just as numbers can	-Recognise and name common 2D shapes, for example, rectangles (including squares), circles and triangles	-Identify and describe the properties of 2D shapes, including the number of sides and line symmetry in a vertical line -Identify 2D shapes on the surface of 3D shapes, for example a circle on a cylinder and a triangle on a pyramid. -Compare and sort common 2D shapes and everyday objects	-Draw 2D shapes	-Compare and classify geometric shapes, including quadrilaterals and triangles based on their properties and sizes -Identify lines of symmetry in 2D shapes presented in different orientations	-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 2D shapes using given dimensions and angles -Compare an classify geometric shapes based on their properties and sizes -Illustrate and name parts of circle, including radius, diameter and circumference and know that the diameter is twice the radius.
3D shapes	-Selects shapes appropriately; flat surfaces for building, a triangular prism for a roof etc -Can talk about and explore 2D and 3D shapes (e.g. circles, rectangles, triangles and cuboids) using		-recognise and name 3D shapes, for example, cuboids (including cubes), pyramids and spheres.	-recognise and name 3D shapes, for example, cuboids (including cubes), pyramids and spheres. -Compare and sort common 3D shapes and everyday objects	-Make 3D shapes using modelling materials; recognise 3D shapes in different orientations and describe them		-Identify 3D shapes, including cubes and other cuboids, from 2D representations	-Recognise, describe and build simple 3D shapes, including making nets

	informal and mathematical language; 'sides', 'corners', 'straight', 'flat', 'round'							
Angles and Lines	Talks about and identifies the patterns around him/her, e.g. stripes on clothes, designs on rugs and wallpaper. He/She uses informal language like 'pointy', 'spotty', 'blobs' etc		-Recognise angles as a property of shape or a description of a turn -Identify right angles, recognise that two right angles make a half turn, three make three quarters and four a complete turn. -Identify where angles are greater than or less than a right angle. -Identify horizontal and vertical lines and pairs of perpendicular and parallel lines	-Identify acute and obtuse angles and compare and order angles up to two right angles by size. -Identify lines of symmetry in 2D shapes presented in different orientations -Compare a simple symmetric figure with respect to a specific line of symmetry.	-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 degrees) Angles at a point on a straight line and half a total turn (total 180 degrees) Other multiples of 90 degrees.	-Find unknown angles in any triangles, quadrilaterals and regular polygons -Recognise angles where they meet at a point, are on a straight line, or ae vertically opposite, and find missing angles		
Position and Direction	-Understands position through words alone, e.g. "The bag is under the table," - with no pointing -Is able to discuss routes and locations, using words like 'in front of' and 'behind' -Can describe a familiar route		-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 rotations as a turn and in terms of right angles for quarter, half and three quarter turns		-Describe positions on a 2D grid as coordinates in the first quadrant -Describe movements between positions as translations of a given unit to the left-right and up/down -Plot specific points and draw sides to complete a given 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 positions on the full coordinate grid (al four quadrants) -Draw and translate simple shapes on the coordinate plane and reflect them in the axes

				(clockwise and anti-clockwise)				

Maths - Statistics

	Nursery	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Present and Interpret				-Interpret and construct simple pictograms, tally charts, block diagrams and simple tables	-Interpret and present data using bar charts, pictograms and tables	-Interpret and present discrete and continuous data using appropriate graphical methods, including bar charts and time graphs	-Complete, read and interpret information in tables, including timetables	-Interpret and construct pie charts and line graphs and use these to solve problems
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	-Solve one-step and two-step questions, for example, 'how many more?' and 'how many fewer?' using information presented in scaled bar charts and pictograms and tables	-Solve comparison, sum and difference problems using information presented in bar charts, pictograms, tables and other graphs	-Solve comparison, sum and difference problems using information presented in a line graph	-Calculate and interpret the mean as an average

Maths – Ratio and Proportion

	Nursery	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
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/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.

Maths - Algebra

	Nursery	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Algebra			-Solve one step problems that involve addition and subtraction, using concrete objects, pictorial representations and missing number problems such as 7 = [] – 9	-Recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems	-Solve problems including missing number problems			-Use simple formulae -Generate and describe linear number sequences -Express missing number problems algebraically -Find pars of numbers that satisfy an equation with two unknowns

								-Enumerate possibilities of combinations of two variables