Number: Number and Place Value

COUNTING						
Reception	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
Enjoys reciting numbers from 0 to 20 (and beyond) and back from 10 to 0, including counting from different starting numbers **ELG Numerical patterns** Become familiar with the counting pattern beyond 20 **ELG Numerical patterns** Count objects, actions and sounds (understand stopping number – cardinality) **ELG Number** Counts out up to 10 objects from a larger group (cardinality **ELG Number**	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 (2s, 5s and 10s taught explicitly in multiplication)	count from 0 in multiples of 4, 8, 50 and 100; (4s and 8s taught explicitly in multiplication)	count in multiples of 6, 7, 9, 25 and 1 000 (6s, 7s and 9s taught explicitly in multiplication)	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		

Subitise numbers within 5 by exploring patterns, including structured and random arrangements. **ELG Number** Identify when it is appropriate to count and when groups can be subitised **ELG Number** Understand the 'one more than/one less than' relationship between consecutive numbers. **ELG Number patterns**						

COMPARING NUMBERS						
Reception	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
Encourage the use of the vocabulary more than, less than, fewer, the same as and equal to **ELG Number patterns** Compare the quantity of objects, including comparing more small things and fewer larger things, spaced out close together and far apart. **ELG Number patterns** Understand when something is the same and when it is not the same **ELG Number patterns** Uses number names and symbols (NB symbols are not required in reception) when comparing numbers	use the language of: equal to, more than, less than (fewer), and new language 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	order and compare numbers to at least 1 000 000 and determine the value of each digit	order and compare numbers up to 10 000 000 and determine the value of each digit

IDENTIFYING, REPRESENTING AND ESTIMATING NUMBERS						
Reception	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
Matches the numeral with a group of items to show how many there are (up to 10) Identify and represent numbers to 10 using five and ten frames, numicon, objects from around the classroom, using fingers, within shapes, using the numeral, on a dice and on a number line/tracks **ELG Number**	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 to 1,000	identify, represent and estimate numbers using different representations to 10,000	identify, represent and estimate numbers using different representations to 1,000,000	identify, represent and estimate numbers using different representations to 10,000,000
READING AND WRITING NUMBERS (including Roman Numerals)						
Increasingly confident at putting numerals in order 0 to 10 (ordinality) **ELG Number patterns** Experiment with their own symbols and marks as well as 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 1000 in numerals and in words	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 and write numbers to at least 1 000 000 and determine the value of each digit read Roman numerals to 1 000 (M) and recognise years written in Roman numerals.	read and write numbers up to 10 000 000 and determine the value of each digit

UNDERSTANDING PLACE VALUE						
Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
		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 and write numbers to at least 1 000 000 and determine the value of each digit	read and write, numbers up to 10 000 000 and determine the value of each digit
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
PROBLEM SOLVING						
Explore patterns of numbers up to 10; including evens and odds. **ELG Number patterns** Solve real world mathematical problems with numbers up to 10.		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

Number: Addition and Subtraction

NUMBER BONDS						
Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Explore the composition of number to 5 and then 10 to develop a deep understanding **ELG Number** Automatically recall number bonds for numbers 0-5 (including subtraction facts) and some number bonds to 10 (including double facts) **ELG Number** Combine two groups to find a total practically **ELG Number** Use vocab of addition: total, altogether, plus add. Use vocab of subtraction	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	recall and use addition and subtraction facts to 20 to support other addition and subtraction facts. E.g. 3 + 6 = 9 - 300 + 600 = 900	recall and use addition and subtraction facts to 20 to support other addition and subtraction facts. E.g. 4 + 12 = 16 400 + 1200 = 1600	recall and use addition and subtraction facts to 20 to support other addition and subtraction facts. E.g. 9 + 9 = 18 9000 + 9000 = 18000 or 5 - 3 =2 0.5 - 0.3 = 0.2	recall and use addition and subtraction facts to 20 to support other addition and subtraction facts. E.g. 5 + 13= 18 - 0.5 + 0.13 = 0.18

MENTAL CALCULATION						
Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Shows awareness that numbers are made up (composed) of smaller numbers, exploring partitioning in different ways with a wide range of objects for numbers up to 10. M38 ELG Number Begins to conceptually	add and subtract one-digit and two-digit numbers to 20, including zero 1	add and subtract numbers using concrete objects, pictorial representations, and mentally, including: * a two-digit number and ones 2AS-1 * a two-digit number and tens * two two-digit numbers 2AS-4 * 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
subitise larger numbers by subitising smaller groups within the number, e.g. sees six raisins on a plate as three and three	read, write and interpret mathematical statements involving addition (+), subtraction (-) and equals (=) signs	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

Reception continued	WRITTEN METHODS					
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
In practical activities, adds one and subtracts one with numbers to 10 Automatically recall double facts up to 5+5 **ELG Number**			add and subtract numbers with up to three digits, using formal written methods of columnar addition and subtraction 3AS-2	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)	
	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.

PROBLEM SOLVING						
Reception	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
Explore patterns of numbers up to 10; including evens and odds. **ELG Number patterns** Solve real world mathematical problems with numbers up to 10	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 problems, including missing number problems, using number facts, place value, and more complex addition and subtraction	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 6AS/MD-1 6AS/MD-2 Solve problems involving addition, subtraction, multiplication and division

Number: Multiplication and Division

MULTIPLICATION & DIVISION FACTS						
Reception	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
Automatically recall double facts up to 5+5	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,	count in multiples of 6, 7, 9,	count forwards or backwards in steps of powers of 10 for any given number up to 1 000 000	
Count in 2s and 10s (number songs) **ELG Number patterns** Practical activities involving sharing and grouping **ELG Number patterns**		recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers	recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables	recall multiplication and division facts for multiplication tables up to 12 × 12 (specific focus on 6, 9, 7, 11 and 12)		
MENTAL CALCULATION						
		show that multiplication of two numbers can be done in any order (commutative) and	write and calculate mathematical statements for multiplication and division using the multiplication tables that they know, including for	use place value, known and derived facts to multiply and divide mentally, including:	multiply and divide numbers mentally drawing upon known facts	perform mental calculations, including with mixed operations and large numbers

		division of one number by another cannot te lesson. *Needs to be plan a*	two-digit numbers times one-digit numbers, using mental and progressing to formal written methods. *E.g. 24 x 2 - I can use double 24 to solve this rather than a written method.*	multiplying by 0 and 1; dividing by 1; multiplying together three numbers		
				recognise and use factor pairs and commutativity in mental calculations	multiply and divide whole numbers and those involving decimals by 10, 100 and 1000	
				multiply and divide whole numbers by 10 and 100.		
WRITTEN CALCULATION						
		calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication (×), division (÷) and equals (=) signs	write and calculate mathematical statements for multiplication and division using the multiplication tables that they know, including for two-digit numbers times one-digit numbers, using mental and progressing to formal written methods.	multiply two-digit and three-digit numbers by a one-digit number using formal written layout	multiply numbers up to 4 digits by a oneor two-digit number using a formal written method, including long multiplication for two digit numbers	multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication

WRITTEN CALCULATION CONTINUED						
Reception	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
					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 divide	ivide numbers up to 4-digits by a two-digit whole number using the formal written method of short division where appropriate for the context’

PROPERTIES OF NUMBERS: MULTIPLES, FACTORS, PRIMES, SQUARE AND CUBE NUMBERS						
Reception	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
				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.	identify common factors, common multiples and prime 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})	*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* (copied from Measures)

ORDER OF OPERATIONS						
Reception	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
						use their knowledge of the order of operations to carry out calculations involving the four operations
NVERSE OPERATIONS, ESTIMATING AND CHECKING ANSWERS						
			estimate the answer to a calculation and use inverse operations to check answers	estimate and use inverse operations to check answers to a calculation	estimate and use inverse operations to check answers to a calculation	use estimation to check answers to calculations and determine, in the context of a problem, levels o accuracy
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	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 to m objects	solve problems involving multiplication and division including using their knowledge of factors and multiples, squares and cubes correspondence problems such as n objects are connected to m objects	solve problems involving addition, subtraction, multiplication and division

Number: Fractions (including decimals)

COUNTING IN FRACTIONAL STEPS					
Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
	Pupils should count in fractions up to 10, starting from any number and using the1/2 and 2/4 equivalence on the number line (Non Statutory Guidance)	count up and down in tenths	count up and down in hundredths		
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 $^{1}/_{3}$, $^{1}/_{4}$, $^{2}/_{4}$ and $^{3}/_{4}$ 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			
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

ADDITION AND SUBTRACTION OF FRACTIONS					
Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
		add and subtract fractions with the same denominator within one whole (e.g. $^{5}/_{7} + {}^{1}/_{7} = {}^{6}/_{7}$)	add and subtract fractions with the same denominator	add and subtract fractions with the same denominator and multiples of the same number 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. $^{2}/_{5} + {}^{4}/_{5} = {}^{6}/_{5} = 1\,{}^{1}/_{5}$)	add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions
MULTIPLICATION AND DIVISION OF FRACTIONS					
				multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams	multiply simple pairs of proper fractions, writing the answer in its simplest form (e.g. $^{1}/_{4} \times {}^{1}/_{2} = {}^{1}/_{8}$) multiply one-digit numbers with up to two decimal places by whole numbers divide proper fractions by whole numbers (e.g. $^{1}/_{3} \div 2 = {}^{1}/_{6}$)

MULTIPLICATION AND DIVISION OF DECIMALS					
Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
					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. $^3/_8$)
					use written division methods in cases where the answer has up to two decimal places

PROBLEM SOLVING					
Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
		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 $^{1}/_{2}$, $^{1}/_{4}$, $^{1}/_{5}$, $^{2}/_{5}$, $^{4}/_{5}$ and those with a denominator of a multiple of 10 or 25.	

Number: Ratio and Proportion

Statements only appear in Year 6 but should be connected to previous learning, particularly fractions and multiplication and division					
Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
					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.

Number: Algebra

EQUATIONS					
Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as *7 = □ - 9* (copied from Addition and Subtraction)	*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)	solve problems, *including missing number problems, using number facts, place value, and more complex addition and subtraction.* (copied from Addition and Subtraction) *solve problems, including missing number problems, involving multiplication and division, including integer scaling* (copied from Multiplication and Division)		*use the properties of rectangles to deduce related facts and find missing lengths and angles* (copied from Geometry: Properties of Shapes)	express missing number problems algebraically
	recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100 (copied from Addition and Subtraction)				find pairs of numbers that satisfy number sentences involving two unknowns
represent and use number bonds and related subtraction facts within 20 (copied from Addition and Subtraction)					