NUMBER AND PLACE VALUE

COUNTING

FS	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6
count reliably with numbers from one to 20	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 1000	count forwards or backwards in steps of powers of 10 for any given number up to 1000000	
say which number is one more or one less than a given number	given a number, identify one more and one less		find 10 or 100 more or less than a given number	find 1000 more or less than a given number		

COMPARING NUMBERS

FS	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6
Place numbers in order from one to 20 in order	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 1000	order and compare numbers beyond 1000	read, write, order and compare numbers to at least 1000000 and determine the value of each digit	read, write, order and compare numbers up to 10 000000 and determine the value of each digit

IDENTIFYING, REPRESENTING AND ESTIMATING NUMBERS

FS	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6
Place numbers in order from one to 20 in order	identify and represent numbers using objects and pictorial representations	identify, represent and estimate numbers using different representations,	identify, represent and estimate numbers using different representations	identify, represent and estimate numbers using different representations		

	including the number line	including the number line				
READING AND WRITING NUMBERS						
Place numbers in order from one to 20 in order	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, write, order and compare numbers to at least 1000000 and determine the value of each digit	read, write, order and compare numbers up to 10 000000 and determine the value of each digit
			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 Roman numerals to 1 000 (M) and recognise years written in Roman numerals.	
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 threedigit 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 1000000 and determine the value of each digit	read, write, order and compare numbers up to 10 000000 and determine the value of each digit
ROUNDING						
				round any number to the nearest 10, 100 or 1000	round any number up to 1000000 to the nearest 10, 100, 1000, 10 000 and 100000	round any whole number to a required degree of accuracy
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
NUMBER AND PLACE VALUE VOCABULARY						
One more One less Place Order Number Count Numbers up to twenty Number line Pictorial Answer Equals Read Write						
NUMBER: ADDITION AND SUBTRACTION						
NUMBER BONDS						
EYFS	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6
	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				
MENTAL CALCULATIONS						
Using quantities and objects, add and subtract two single-digit numbers and	add and subtract one-digit and two-digit numbers to 20, including zero	add and subtract numbers using concrete objects, pictorial	add and subtract numbers mentally, including:		add and subtract numbers mentally with increasingly large numbers	perform mental calculations, including with mixed

count on or back to find the answer		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	* a three-digit number and ones * a three-digit number and tens * a three-digit number and hundreds			operations and large numbers
	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
WRITTEN METHODS						
Using quantities and objects, add and subtract two single digit numbers and count on or back to find the answer	read, write and interpret mathematical statements involving addition (+), subtraction (-) and equals (=) signs		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)	
INVERSE OPERATIONS, ESTIMATING AND CHECKING ANSWERS						
		recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve	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.

		missing number problems.				
PROBLEM SOLVING						
Solve problems, including doubling, halving and sharing.	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 Solve problems involving addition, subtraction, multiplication and division

ADDITION AND SUBTRACTION VOCABULARY

EYFS	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6
Add Subtract Addition Subtraction Adding Subtracting Number Number line Single digit Count on Count back Answer	**Same as EYFS, plus:** **One step problem** **Concrete object** **Pictorial representation** **Missing number** **Problem** **Read** **Write** **Interpret** **Equals =** **Signs**	**Same as EYFS & Year 1, plus:** **Columnar addition** **Columnar Subtraction** **Tens** **Order** **Inverse** **Relationship** **Calculation** **Solve problems** **Missing number problems**	**Same as EYFS & KS1, plus:** **Three-digit number** **Hundreds** **Estimate** **Number facts**	**Same as previous year groups, plus:** **Two step problems** **Context** **Four-digit**	**Same as previous year groups, plus:** **Increasingly large numbers** **More than 4 digits** **Rounding** **Determine** **Context** **Multi-step problems**	**Same as previous year groups, plus:** **Estimation** **Mixed operations**

Doubling Halving Sharing Numbers to twenty Check	One-digit Two-digit Ones Mental Mentally	Quantities Measures Formal Written method Mental method Method Operation Apply Whole number				

NUMBER: MULTIPLICATION AND DIVISION						
EYFS	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6
	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*	
		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		

MENTAL 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	*associate a fraction with division and calculate decimal fraction equivalents (e.g. 0.375) for a simple fraction (e.g. 3/8)* (copied from Fractions)
				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 (appears also in Mental 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 one- or 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
					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 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 rounding, as appropriate for the context
						use written division methods in cases where the answer has up to two decimal places

PROPERTIES OF NUMBERS: 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.	dentify common factors, common multiples and prime numbers
					know and use the vocabulary of prime numbers, prime factors and composite (nonprime) numbers	*use common factors to simplify fractions; use common multiples to express fractions in the same denomination*
					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 thenotation 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$_3$*

ORDER OF OPERATIONS

						use their knowledge of the order of operations to carry out calculations involving the four operations

INVERSE 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*	use estimation to check answers to calculations and determine, in the context of a problem, levels of 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 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 and a combination of these, including understanding the meaning of the equals sign	solve problems involving addition, subtraction, multiplication and division

MULTIPLICATION AND DIVISION VOCABULARY

EYFS	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6
	Multiples **Twos** **Fives** **Tens** **Number** **Multiply** **Divide** **Multiplication** **Division** **One step problem** **Answer** **Concrete object** **Pictorial representation** **Arrays** **Count**	**Same as EYFS & Year 1, plus:** **Multiplication facts** **Division facts** **Multiplication tables** **Odd numbers** **Even numbers** **Share** **Equally** **Repeated division** **Calculate**	**Same as EYFS & KS1, plus:** **Missing number problem** **Estimate** **Inverse** **Formal written method** **Mathematical statement** **Recall** **Integer** **Two- digit** **One- digit**	**Same as previous year groups, plus:** **Derived facts** **Factors** **Factor pairs** **Scaling problems** **Three-digit**	**Same as previous year groups, plus:** **Decimals** **Four-digit** **Long multiplication** **Short division** **Remainders** **Context** **Common factors** **Common multiples** **Prime numbers** **Prime factors** **Composite numbers** **Square number** **Cube number** **Notation**	**Same as previous year groups, plus:** **Scale factor** **Long division** **Whole number remainders** **Fractions** **Rounding** **Mixed operations**

	Equals Write				Squares Cubes	

FRACTIONS (INCLUDING DECIMALS AND PERCENTAGES)

EYFS	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 and name a quarter as one of four equal parts of an object, shape or quantity | recognise, find, name and write fractions₁ /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 tenths arise from dividing an object into 10 equal parts and in dividing one – digit numbers or quantities by 10.

recognise and use fractions as numbers: 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) | |

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

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
ROUNDING INCLUDING DECIMALS						
				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
EQUIVALENCE (INCLUDING FRACTIONS, DECIMALS AND PERCENTAGES)						
		write simple fractions e.g. ½ OF 6 = 3 and recognise the equivalence of 2/4 and ½.	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 = 71/100)	associate a fraction with division and calculate decimal fraction equivalents (e.g. 0.375) for a simple fraction (e.g. 3/8)
					recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents	
				recognise and write decimal equivalents to ¼, ½,3/4	recognise the per cent symbol (%) and understand that percent 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.
ADDITION AND SUBTRACTION OF FRACTIONS						
			add and subtract fractions with the same denominator within one whole	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

					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	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. ¼ x1/2 = 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 divide by 2 =1/6)