

Mathematics Programme of Study – Number

	Number and Place Value	Addition and Subtraction	Multiplication and Division	Fractions (including decimals and percentages)
Year 1	<p><i>count to and across 100, forwards and backwards, beginning with 0 or 1, or from any given number</i></p> <p>count, read and write numbers to 100 in numerals; count in multiples of twos, fives and tens</p> <p>given a number, identify one more and one less</p> <p>identify and represent numbers using objects and pictorial representations including the number line, and use the language of: equal to, more than, less than (fewer), most, least</p> <p>read and write numbers from 1 to 20 in numerals and words</p>	<p>read, write and interpret mathematical statements involving addition (+), subtraction (-) and equals (=) signs</p> <p>represent and use number bonds and related subtraction facts within 20</p> <p>add and subtract one-digit and two-digit numbers to 20, including zero</p> <p>solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as $7 = \square - 9$.</p>	<p><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></p>	<p><i>find and name a half as one of two equal parts of an object, shape or quantity</i></p> <p><i>recognise, find and name a quarter as one of four equal parts of an object, shape or quantity</i></p>
Year 2	<p>count in steps of 2, 3, and 5 from 0, and in tens from any number, forward or backward</p> <p>recognise the place value of each digit in a two-digit number (tens, ones)</p> <p>identify, represent and estimate numbers using different representations, including the number line</p>	<p>solve problems with addition and subtraction using concrete objects and pictorial representations, including those involving numbers, quantities and measures</p> <p>solve problems with addition and subtraction applying their increasing knowledge of mental and written methods</p>	<p>recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers</p> <p>calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication (\times), division (\div) and equals (=) signs</p>	<p><i>recognise, find, name and write fractions $1/3$, $1/4$, $2/4$ and $3/4$ of a length, shape, set of objects or quantity</i></p> <p><i>write simple fractions e.g. $1/2$ of $6 = 3$ and recognise the equivalence of $2/4$ and $1/2$.</i></p>

	Number and Place Value	Addition and Subtraction	Multiplication and Division	Fractions (including decimals and percentages)
	<p>compare and order numbers from 0 up to 100; use <, > and = signs</p> <p>read and write numbers to at least 100 in numerals and in words</p> <p>use place value and number facts to solve problems.</p>	<p>recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100</p> <p>add and subtract numbers using concrete objects, pictorial representations, and mentally, including:</p> <ul style="list-style-type: none"> ☐ a two-digit number and ones ☐ a two-digit number and tens ☐ two two-digit numbers ☐ adding three one-digit numbers <p>show that addition of two numbers can be done in any order (commutative) and subtraction of one number from another cannot</p> <p><i>recognise and use the inverse relationship between addition and subtraction and use this to check calculations and missing number problems</i></p>	<p>show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot</p> <p>solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication</p>	
Year 3	<p><i>count from 0 in multiples of 4, 8, 50 and 100;</i></p> <p>find 10 or 100 more or less than a given number</p> <p>recognise the place value of each digit in a three-digit number (hundreds, tens, ones)</p> <p>compare and order numbers up to 1000</p>	<p>add and subtract numbers mentally, including:</p> <ul style="list-style-type: none"> ☐ a three-digit number and ones ☐ a three-digit number and tens ☐ a three-digit number and hundreds <p>add and subtract numbers with up to three digits, using formal written methods of columnar addition and subtraction</p>	<p>recall and use multiplication and division facts for the 3, 4 and 8 <i>multiplication tables</i></p> <p>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</p>	<p>count up and down in tenths; recognise that tenths arise from dividing an object into 10 equal parts and in dividing one-digit numbers or quantities by 10</p> <p>recognise, find and write fractions of a discrete set of objects: unit fractions and non-unit fractions with small denominators</p>

	Number and Place Value	Addition and Subtraction	Multiplication and Division	Fractions (including decimals and percentages)
	<p>identify, represent and estimate numbers using different representations</p> <p>read and write numbers up to 1000 in numerals and in words</p> <p>solve number problems and practical problems involving these ideas.</p>	<p>estimate the answer to a calculation and use inverse operations to check answers</p> <p>solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction.</p>	<p>solve problems, including missing number problems, involving multiplication and division, including integer scaling problems and correspondence problems in which n objects are connected to m objects.</p>	<p>recognise and use fractions as numbers: unit fractions and non-unit fractions with small denominators</p> <p>recognise and show, using diagrams, equivalent fractions with small denominators</p> <p><i>add and subtract fractions with the same denominator within one whole (e.g. $5/7 + 1/7 = 6/7$)</i></p> <p>compare and order unit fractions, and fractions with the same denominators</p> <p>solve problems that involve all of the above</p>
Year 4	<p><i>count in multiples of 6, 7, 9, 25 and 1000</i></p> <p>find 1000 more or less than a given number</p> <p><i>count backwards through zero to include negative numbers</i></p> <p>recognise the place value of each digit in a four-digit number (thousands, hundreds, tens, and ones)</p> <p>order and compare numbers beyond 1000</p> <p>identify, represent and estimate numbers using different representations</p>	<p><i>add and subtract numbers with up to 4 digits using the formal written methods of column addition and subtraction where appropriate</i></p> <p>estimate and use inverse operations to check answers to a calculation</p> <p>solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why.</p>	<p><i>recall multiplication and division facts for multiplication tables up to 12×12</i></p> <p>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</p> <p>recognise and use factor pairs and commutativity in mental calculations</p> <p>multiply two-digit and three-digit numbers by a one-digit number using formal written layout</p> <p>solve problems involving</p>	<p>recognise and show, using diagrams, families of common equivalent fractions</p> <p><i>count up and down in hundredths; recognise that hundredths arise when dividing an object by a hundred and dividing tenths by ten.</i></p> <p>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</p>

	Number and Place Value	Addition and Subtraction	Multiplication and Division	Fractions (including decimals and percentages)
	<p>round any number to the nearest 10, 100 or 1000</p> <p>solve number and practical problems that involve all of the above and with increasingly large positive numbers</p> <p>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.</p>		<p>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.</p>	<p>add and subtract fractions with the same denominator</p> <p>recognise and write decimal equivalents of any number of tenths or hundredths</p> <p>recognise and write decimal equivalents to $\frac{1}{4}$; $\frac{1}{2}$; $\frac{3}{4}$ find the effect of dividing a one- or two-digit number by 10 and 100, identifying the value of the digits in the answer as units, tenths and hundredths</p> <p>round decimals with one decimal place to the nearest whole number</p> <p>compare numbers with the same number of decimal places up to two decimal places</p> <p>solve simple measure and money problems involving fractions and decimals to two decimal places.</p>
Year 5	<p><i>read, write, order and compare numbers to at least 1 000 000 and determine the value of each digit</i></p> <p>count forwards or backwards in steps of powers of 10 for any given number up to 1 000 000</p>	<p><i>add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction)</i></p> <p>add and subtract numbers mentally with increasingly large numbers</p>	<p>identify multiples and factors, including finding all factor pairs of a number, and <i>common factors of two numbers.</i></p> <p>solve problems involving multiplication and division where larger numbers are used by decomposing them into their factors</p>	<p>Compare and order fractions whose denominators are all multiples of the same number</p> <p>identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths</p>

	Number and Place Value	Addition and Subtraction	Multiplication and Division	Fractions (including decimals and percentages)
	<p>interpret negative numbers in context, count forwards and backwards with positive and negative whole numbers through zero</p> <p>round any number up to 1 000 000 to the nearest 10, 100, 1000, 10 000 and 100 000</p> <p>solve number problems and practical problems that involve all of the above</p> <p><i>read Roman numerals to 1000 (M) and recognise years written in Roman numerals</i></p>	<p>use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy</p> <p>solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why.</p>	<p><i>know and use the vocabulary of prime numbers, prime factors and composite (non-prime) numbers</i></p> <p>establish whether a number up to 100 is prime and recall prime numbers up to 19</p> <p><i>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</i></p> <p>multiply and divide numbers mentally drawing upon known facts</p> <p><i>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</i></p> <p>multiply and divide whole numbers and those involving decimals by 10, 100 and 1000</p> <p><i>recognise and use square numbers and cube numbers, and the notation for squared (2) and cubed (3)</i></p> <p>solve problems involving addition, subtraction, multiplication and division and a combination of these, including</p>	<p>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. $2/5 + 4/5 = 6/5 = 11/5$)</p> <p>add and subtract fractions with the same denominator and multiples of the same number</p> <p>multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams</p> <p>read and write decimal numbers as fractions (e.g. $0.71 = 71/100$)</p> <p>recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents</p> <p>round decimals with two decimal places to the nearest whole number and to one decimal place</p> <p>read, write, order and compare numbers with up to three decimal places</p> <p>solve problems involving number up to three decimal places</p>

	Number and Place Value	Addition and Subtraction	Multiplication and Division	Fractions (including decimals and percentages)
			<p>understanding the meaning of the equals sign</p> <p>solve problems involving multiplication and division, including scaling by simple fractions and problems involving simple rates.</p>	<p>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 hundred, and as a decimal fraction</p> <p>solve problems which require knowing percentage and decimal equivalents of $\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{5}$, $\frac{2}{5}$, $\frac{4}{5}$ and those with a denominator of a multiple of 10 or 25</p>
Year 6	<p><i>read, write, order and compare numbers up to 10 000 000 and determine the value of each digit</i></p> <p>round any whole number to a required degree of accuracy</p> <p>use negative numbers in context, and calculate intervals across zero</p> <p>solve number and practical problems that involve all of the above.</p>	<p>use their knowledge of the order of operations to carry out calculations involving the four operations</p> <p>solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why</p> <p>solve problems involving addition, subtraction,</p> <p>use estimation to check answers to calculations and determine, in the context of a problem, levels of accuracy</p>	<p><i>multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication</i></p> <p><i>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</i></p> <p>perform mental calculations, including with mixed operations and large numbers.</p> <p>identify common factors, common multiples and prime numbers</p> <p>use their knowledge of the order</p>	<p>use common factors to simplify fractions; use common multiples to express fractions in the same denomination</p> <p>compare and order fractions, including fractions >1</p> <p>add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions</p> <p><i>multiply simple pairs of proper fractions, writing the answer in its simplest form (e.g. $\frac{1}{4} \times \frac{1}{2} = \frac{1}{8}$)</i></p> <p><i>divide proper fractions by whole numbers (e.g. $\frac{1}{3} \div 2 = \frac{1}{6}$)</i></p>

	Number and Place Value	Addition and Subtraction	Multiplication and Division	Fractions (including decimals and percentages)
			<p>of operations to carry out calculations involving the four operations</p> <p>solve problems involving multiplication and division</p> <p>use estimation to check answers to calculations and determine, in the context of a problem, levels of accuracy</p>	<p>associate a fraction with division and calculate decimal fraction equivalents (e.g. 0.375) for a simple fraction (e.g. $\frac{3}{8}$)</p> <p>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</p> <p>multiply one-digit numbers with up to two decimal places by whole numbers</p> <p>use written division methods in cases where the answer has up to two decimal places</p> <p>solve problems which require answers to be rounded to specified degrees of accuracy</p> <p>recall and use equivalences between simple fractions, decimals and percentages, including in different contexts.</p>