



Lower Key Stage 2 – Years 3 and 4

The principal focus of mathematics teaching in lower Key Stage 2 is to ensure that pupils become increasingly fluent with whole numbers and the four operations, including number facts and the concept of place value. This should ensure that pupils develop efficient written and mental methods and perform calculations accurately with increasingly large whole numbers.

At this stage, pupils should develop their ability to solve a range of problems, including with simple fractions and decimal place value. Teaching should also ensure that pupils draw with increasing accuracy and develop mathematical reasoning so they can analyse shapes and their properties, and confidently describe the relationships between them. It should ensure that they can use measuring instruments with accuracy and make connections between measure and number.

By the end of Year 4, pupils should have memorised their multiplication tables up to and including the 12 multiplication table and show precision and fluency in their work.

Pupils should read and spell mathematical vocabulary correctly and confidently, using their growing word reading knowledge and their knowledge of spelling.

Year 3 Programme of Study	Notes and Guidance
<p>Number – number and place value Pupils should be taught to:</p> <ul style="list-style-type: none"> § count from 0 in multiples of 4, 8, 50 and 100; finding 10 or 100 more or less than a given number § recognise the place value of each digit in a three-digit number (hundreds, tens, ones) § compare and order numbers up to 1000 § identify, represent and estimate numbers using different representations § read and write numbers to at least 1000 in numerals and in words § solve number problems and practical problems involving these ideas. 	<p>Number – number and place value Pupils now use multiples of 2, 3, 4, 5, 8, 10, 50 and 100. They use larger numbers to at least 1000, applying partitioning related to place value using varied and increasingly complex problems, building on work in Year 2 (e.g. $146 = 100 + 40 + 6$, $146 = 130 + 16$). Using a variety of representations, including those related to measure, pupils should continue to count in ones, tens and hundreds, so that they become fluent in the order and place value of numbers to 1000.</p>
<p>Number - addition and subtraction Pupils should be taught to:</p> <ul style="list-style-type: none"> § add and subtract numbers mentally, including: <ol style="list-style-type: none"> 1. a three-digit number and ones 2. a three-digit number and tens 3. a three-digit number and hundreds § add and subtract numbers with up to three digits, using formal written methods of columnar addition and subtraction § estimate the answer to a calculation and use inverse operations to check answers § solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction. 	<p>Number - addition and subtraction Pupils should practise solving varied addition and subtraction questions. For mental calculations with two-digit numbers, the answers could exceed 100. Pupils should use their understanding of place value and partitioning, and practise using columnar addition and subtraction with increasingly large numbers up to three digits to become fluent.</p>



<p>Number - multiplication and division Pupils should be taught to:</p> <ul style="list-style-type: none"> § recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables § 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 efficient written methods § 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. 	<p>Number - multiplication and division Pupils should continue to practise their mental recall of multiplication tables when they are calculating mathematical statements in order to improve fluency. Through doubling, they connect the 2, 4 and 8 multiplication tables. Pupils should develop efficient mental methods, for example, using commutativity and associativity (e.g. $4 \times 12 \times 5 = 4 \times 5 \times 12 = 20 \times 12 = 240$) and multiplication and division facts (e.g. using $3 \times 2 = 6$, $6 \div 3 = 2$ and $2 = 6 \div 3$) to derive related facts ($30 \times 2 = 60$, $60 \div 3 = 20$ and $20 = 60 \div 3$). Pupils should develop reliable written methods for multiplication and division, starting with calculations of two-digit numbers by one-digit numbers and progressing to the formal written methods of short multiplication and division. Pupils should solve simple problems in contexts, deciding which of the four operations to use and why. These include measuring and scaling contexts (for example, four times as high, eight times as long etc.) and correspondence problems in which m objects are connected to n objects (e.g. 3 hats and 4 coats, how many different outfits?; 12 sweets shared equally between 4 children; 4 cakes shared equally between 8 children).</p>
<p>Number - fractions Pupils should be taught to:</p> <ul style="list-style-type: none"> § 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 § 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 small denominators § recognise and show, using diagrams, equivalent fractions with small denominators § add and subtract fractions with the same denominator within one whole (e.g. $\frac{5}{7} + \frac{1}{7} = \frac{6}{7}$) § compare and order unit fractions and fractions with the same denominators § solve problems that involve all of the above. 	<p>Number - fractions Pupils should connect tenths to place value, decimal measures and to division by 10. They should begin to understand unit and non-unit fractions as numbers on the number line, and deduce relations between them, such as size and equivalence. They should go beyond the [0, 1] interval, relating this to measure. Pupils should understand the relation between unit fractions as operators (fractions of) and division by integers. They should continue to recognise fractions in the context of parts of a whole, numbers, measurements, a shape, or unit fractions as a division of a quantity. Pupils should practise adding and subtracting fractions with the same denominator through a variety of increasingly complex problems to improve fluency.</p>



<p>Measurement Pupils should be taught to:</p> <ul style="list-style-type: none"> § measure, compare, add and subtract: lengths (m/cm/mm); mass (kg/g); volume/capacity (l/ml) § measure the perimeter of simple 2-D shapes § add and subtract amounts of money to give change, using both £ and p in practical contexts § tell and write the time from an analogue clock, including using Roman numerals from I 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. 	<p>Measurement Pupils should continue to measure using the appropriate tools and units, progressing to using a wider range of measures, including comparing and using mixed units (e.g. 1 kg and 200g) and simple equivalents of mixed units (e.g. 5m = 500cm). The comparison of measures should also include simple scaling by integers (e.g. a given quantity or measure is twice as long or five times as high) and connect this to multiplication. Pupils should continue to become fluent in recognising the value of coins, by adding and subtracting amounts, including mixed units, and giving change using manageable amounts. They should record £ and p separately. The decimal recording of money is introduced formally in Year 4. Pupils should use both analogue and digital 12-hour clocks and record their times. In this way they become fluent in and prepared for using digital 24-hour clocks in Year 4.</p>
<p>Geometry - properties of shapes Pupils should be taught to:</p> <ul style="list-style-type: none"> § draw 2-D shapes and make 3-D shapes using modelling materials; recognise 3-D shapes in different orientations; and describe them § 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 of a turn and four a complete turn; identify whether angles are greater than or less than a right angle § identify horizontal and vertical lines and pairs of perpendicular and parallel lines. 	<p>Geometry - properties of shapes Pupils' knowledge of the properties of shapes is extended at this stage to symmetrical and non-symmetrical polygons and polyhedra. Pupils extend their use of the properties of shapes. They should be able to describe the properties of 2-D and 3-D shapes using accurate language, including lengths of lines and acute and obtuse for angles greater or lesser than a right angle. Pupils connect decimals and rounding to drawing and measuring straight lines in centimetres, in a variety of contexts.</p>
<p>Statistics Pupils should be taught to:</p> <ul style="list-style-type: none"> § interpret and present data using bar charts, pictograms and tables § solve one-step and two-step questions such as 'How many more?' and 'How many fewer?' using information presented in scaled bar charts and pictograms and tables. 	<p>Statistics Pupils should understand and use simple scales (e.g. 2, 5, 10 units per cm) in pictograms and bar charts with increasing accuracy. They should continue to interpret data presented in many contexts.</p>