

Mathematics Long Term Overview 2024 to 25

Year 6

Counting, properties of numbers and number sequences	Place Value and Ordering and rounding	Rapid recall of addition and subtraction facts	Pencil and paper procedures (+ and -)
<p>Recognise and extend number sequences, such as the sequence of square numbers, or the sequence of triangular numbers 1, 3, 6, 10, 15...</p> <p>Recognise and extend number sequences with decimals, fractions, negative numbers and formulae</p> <p>Count on in steps of 0.1, 0.2, 0.25, 0.5..., and then back.</p> <p>Make general statements about odd or even numbers, including the outcome of products.</p> <p>Recognise squares of numbers to at least 12² x 12, and cubed numbers</p> <p>Identify common factors, common multiples and prime numbers up to 20 and factorise numbers up to 100</p>	<p>Multiply and divide decimals mentally by 10 or 100, and integers by 1000, giving answers to 3dp and explain the effect and relate to conversion of measurements e.g. g to kg, cm to m, mm to cm.</p> <p>Round any whole number to a required degree of accuracy</p> <p>Interpret and use negative numbers in context, and calculate intervals across zero Count forwards and backwards with positive and negative whole numbers Find the difference between a positive and a negative integer, or two negative integers, in a context such as temperature or the number line, and order a set of positive and negative integers.</p> <p>Read, write, order and compare numbers up to 10,000,000 and determine the value of each digit. Count forwards and backwards in steps of powers of 10 for any given number up to 10,000,000</p> <p>Solve multi step number problems and practical problems involving all of the above and utilising all four operations</p>	<p>Consolidate knowing by heart: multiplication facts up to 12 X 12. Derive quickly: -division facts corresponding to tables up to 12 X 12 -squares of multiples of 10 to 100 (eg 60 x 60) doubles of two-digit numbers (eg 3.8 x 2, 0.76 x 2) -doubles of multiples of 10 to 1000 (eg 670 x 2) -doubles of multiples of 100 to 10000 (eg 6500 X 2) and the corresponding halves.</p> <p>Perform mental calculations, including with mixed operations and large numbers</p>	<p>Use informal and formal pencil and paper methods to support, record or explain additions and subtractions.</p> <p>Solve addition and subtraction multi-step problems in contexts, deciding on which operations and methods to use and why</p> <p>Use estimation to check answers to calculations and determine, in the context of a problem, an appropriate ° of accuracy.</p> <p>Use their knowledge of the order of operations to carry out calculations involving the four operations.</p> <p>Solve problems involving all four operations</p> <p>Extend written methods to: column addition/ subtraction of numbers involving decimals, measures and money.</p>

Year 6

Understanding multiplication and division	Rapid recall of multiplication and division facts	Pencil and paper procedures (\div and \times)	Checking results of calculations
<p>Understand and use the relationships between the four operations, and the principles (not the names) of the arithmetic laws</p> <p>Use their knowledge of the order of operations to carry out calculations involving the four operations.</p> <p>Express a quotient as a fraction, or as a decimal rounded to 1dp</p> <p>Round up or down after division, depending on the context</p> <p>Identify common factors, multiples and prime numbers</p> <p>Understand and apply tests of divisibility using known facts.</p>	<p>Perform mental calculations, including with mixed operations and large numbers</p> <p>Derive quickly:</p> <ul style="list-style-type: none"> - doubles of two-digit numbers (e.g. 3.8×2, 0.76×2); - doubles of multiples of 10 to 1000 (e.g. 670×2); doubles of multiples of 100 to 10000 (e.g. 6500×2); and the corresponding halves. - division facts corresponding to tables up to 12×12 - squares of multiples of 10 to 100 (e.g. 60×60) <p>Consolidate knowing by heart: multiplication facts up to 12×12</p>	<p>Use formal and informal pencil and paper methods to support, record or explain multiplications and divisions.</p> <p>Multiply multi-digit numbers up to 4 digits by by a two-digit number using the formal method of long multiplication</p> <p>Divide numbers of up to 4 digit numbers by a two digit whole number using the formal written methods of long division, and interpret remainders as whole numbers, fractions or by rounding.</p> <p>Divide numbers of up to 4 digit numbers by a two digit whole number using the formal written method of short division where appropriate</p> <p>Use estimation to check answers to calculations and determine, in the context of a problem, an appropriate ° of accuracy.</p> <p>Use their knowledge of the order of operations to carry out calculations involving the four operations.</p> <p>Solve problems involving all four operations</p> <p>Multiply one digit numbers with up to 2dp by whole numbers</p> <p>Extend written methods to: multiplication of numbers involving decimals, measures and money.</p>	<p>Use estimation to check answers to calculations and determine, in the context of a problem, an appropriate ° of accuracy.</p> <p>Check with an equivalent calculation.</p> <p>Estimate by approximating (round to the nearest 10, 100 or 1000)</p> <p>Use knowledge of sums, differences, products of odd/even numbers</p>

Year 6

Fractions including decimals and percentages	Reasoning and generalising and numbers or shapes	Problems involving 'real life' money and measures	Algebra and Ratio
<p>- Change a fraction such as $\frac{33}{8}$ to the equivalent mixed number $4\frac{1}{8}$ and vice versa.</p> <p>- Recognise relationships between fractions: for example, that $\frac{1}{10}$ is ten times $\frac{1}{100}$, and $\frac{1}{16}$ is half of $\frac{1}{8}$.</p> <p>-simplify fractions using common factors and use common multiples to express fractions in the same denomination</p> <p>-Compare and order fractions such as $\frac{2}{3}$, $\frac{3}{4}$ and $\frac{5}{6}$ by converting them to fractions with a common denominator, and position them on a number line.</p> <p>-identify the value of each digit represents in a number with up to 3dp and multiply and divide numbers by 10, 100 and 1000</p> <p>- Give a decimal fraction lying between two others (e.g. between 3.4 and 3.5).</p> <p>-Order a mixed set of numbers or measurements with up to 3dp</p> <p>-solve problems that require answers to be rounded to specific degrees of accuracy</p> <p>-solve problems involving the calculation of percentages (e.g. find 10% of £500, then 20%, 40% and 80% by doubling)</p> <p>-Compare and order fractions, decimals and percentages more and less than 1</p> <p>-Add, subtract, divide fraction by whole numbers and multiply fractions with different denominators, mixed numbers and whole numbers using the concept of equivalent fractions</p> <p>-Recall and use equivalence of simple fractions, decimals and percentages, (one half, one third, one quarter, three quarters, one eighth... and tenths, hundredths and thousandths) including in differing contexts</p> <p>- multiply one digit numbers with up to 2dp by whole numbers</p>	<p>Explain methods and reasoning, orally and in writing.</p> <p>Solve mathematical problems or puzzles, recognise and explain patterns and relationships, generalise and predict. Suggest extensions asking 'What if...?'</p> <p>Make and investigate a general statement about familiar numbers or shapes by finding examples that satisfy it</p> <p>Develop from explaining a generalised relationship in words to expressing it in a formula using letters as symbols (e.g. the cost of n articles at 15p each.)</p>	<p>Use appropriate operations (including combinations of operations) to solve word problems involving numbers and quantities based on 'real life', money or measures (including time), using one or more steps, including converting pounds to foreign currency, or vice versa, and calculating percentages such as VAT. Explain methods and reasoning</p> <p>Multiply one digit numbers with up to 2dp by whole numbers</p> <p style="text-align: center;">Solving problems and making decisions</p> <p>Choose and use appropriate number operations to solve problems, and appropriate ways of calculating: mental, mental with jottings, formal written methods</p> <p>Choose and use appropriate number operations to solve problems, and appropriate ways of calculating: mental, mental with jottings, written methods for multistep problems involving all four operations using knowledge of factors and multiples, squares and cubes</p> <p>Utilise problem solving strategies to work systematically using all four operations, including finding all possibilities, working backwards, finding rules and describing patterns, and making a table or list</p>	<p style="text-align: center;">Algebra</p> <p>Use simple formulae</p> <p>Generate and describe number sequences, including those which are below zero, and include fractions, decimals and percentages</p> <p>Express missing number problems algebraically</p> <p>Find missing numbers to satisfy an equation with two unknowns</p> <p>Enumerate possibilities of combinations of two variables</p> <p style="text-align: center;">Ratio</p> <p>Solve problems involving relative sizes of two quantities where missing values can be found by using integer multiplication and division facts</p> <p>Solve problems involving calculation of percentages and use percentages for comparison (how many percent bigger/smaller)</p> <p>Solve problems involving similar shapes where the scale factor is known or can be found</p> <p>Solve problems involving unequal sharing and grouping using knowledge of fractions and multiples</p>

Year 6

Statistics	Measurement - mass, length, capacity and time	Measurement - area, perimeter and volume	Geometry - properties of shapes and position and direction
<p>Calculate and interpret the mean (average) of a set of data.</p> <p>Interpret and construct pie charts and line graphs and use these to solve problems</p> <p>Solve problems using line graphs, pie charts, Carroll Diagrams, timetables, Venn diagrams, and timetables</p> <p>Use the language associated with probability to discuss events, including those with equally likely outcomes.</p> <p>Solve problem by representing, extracting and interpreting data in tables, graphs, charts and diagrams, frequency tables and bar charts with grouped discrete data (e.g. test marks 0–5, 6–10, 11–15...)</p>	<p>Solve problems involving the calculation and conversion of units of measure, using decimal notation up to three decimal places where appropriate</p> <p>Use, read and write and convert standard metric units (km, m, cm, mm,kg, g, l, ml, cl), including their abbreviations, and relationships between them.</p> <p>Convert smaller to larger units (e.g. m to km, cm or mm to m, g to kg, ml to l) and vice versa..</p> <p>Convert between miles and kilometres and solve problems involving both units of measure</p> <p>Know imperial units (mile, pint, gallon, lb, oz)</p> <p>Suggest suitable units and measuring equipment to estimate or measure length, mass or capacity.</p> <p>Record estimates and readings from scales to a suitable degree of accuracy.</p>	<p>Describe and visualise properties of solid shapes such as parallel or perpendicular faces or edges, equal sides/angles and use this information to classify them.</p> <p>Recognise when it is possible to use a formula for area, perimeter and volume of shapes</p> <p>Calculate, estimate and compare volume of cubes and cuboids using standard units, including cubic centimetres and cubic metres and then extending to other units such as mm and km</p> <p>Calculate the area of parallelograms and triangles</p> <p>Recognise that shapes with the same areas can have different perimeters and vice versa</p>	<ul style="list-style-type: none"> - Draw 2-D shapes using given dimensions and angles - Recognise and estimate angles. - Use a protractor to measure and draw acute and obtuse angles to the nearest degree. - Recognise, describe and build simple 3-D shapes, including making nets. - Recognise where a shape will be after a rotation through 90° about one of its vertices. - Compare and classify geometric shapes based on their properties and find unknown angles in any triangles, quadrilaterals and regular polygons using known facts - Illustrate and name parts of circles, including radius, diameter and circumference and know that diameter is radius x 2 - Recognise and calculate angles where they meet at a point, are on a straight line, or are vertically opposite and find missing angles <p style="text-align: center;">Position and direction</p> <ul style="list-style-type: none"> - Describe positions in all four quadrants - Draw and translate simple shapes on the coordinate plane, and reflect them in the axes

