

## Mathematics Long Term Overview 2024 to 25

<b>EYFS</b>			
<b>Counting, properties of numbers and number sequences</b>	<b>Place Value and Ordering and rounding</b>	<b>Understanding addition and subtraction</b>	<b>Rapid recall of addition and subtraction facts</b>
<p><i>Count objects, actions and sounds.</i></p> <p><i>Count forwards to 10</i></p> <p><i>Count backwards from 10</i></p> <p><i>Count out a smaller number of objects from a larger group.</i></p> <p><i>When counting objects, know that the last number (the stop number) indicates the total number in the group.</i></p> <p><i>Say one number for each item in order up to 10.</i></p> <p><i>Show finger numbers up to 10.</i></p> <p><i>Verbally count beyond 20, recognising the pattern of the counting system</i></p> <p><i>Have a deep understanding of number to 10, including the composition of each number .</i></p>	<p>To recite numbers beyond 10.</p> <p>Say one number for each item in order up to 10.</p> <p>Comparing quantities up to 10 in different contexts, recognising then one quantity is greater than, less than or the same as another quantity</p> <p>To say how many objects there might be before counting to check giving a purpose to counting.</p> <p>To develop fast recognition of up to 10 objects without having to count them individually (subitising)</p>	<p>To use the 'part whole' model to explore aggregation and partitioning of quantities.</p>	<p>- Automatically recall (without reference to rhymes, counting or other aids) number bonds up to 5 (including subtraction facts) and some number bonds to 10, including double facts.</p>
<b>Understanding multiplication and division</b>	<b>Reasoning and generalising about numbers or shapes</b>	<b>Measurement</b>	<b>Geometry - properties of shapes - position and direction</b>
<p>Explore and represent patterns within numbers up to 10, including evens and odds, double facts and how quantities can be distributed equally. E.g. Double 2 is 4. 10 biscuits shared into 2 groups is 5 biscuits each.</p>	<p>- To understand the 'one than/one less than' relationship between consecutive numbers</p>	<p>To be able to make comparisons between objects relating to size, length, weight and capacity</p>	<p>- Compose and decompose shapes so that children recognise a shape can have other shapes within it, just as numbers can.</p> <p>- To be able to talk about and explore 2D and 3D shapes (e.g. circles, rectangles, triangles and cuboids) using informal and mathematical language. 'sides', 'corners', 'straight' 'flat' 'round'.</p> <p>- Select, rotate and manipulate shapes to develop spatial reasoning skills.</p> <p>- Continue, copy and create repeating patterns.</p>

## Year 1

Counting, properties of numbers and number sequences	Place Value and Ordering and rounding	Understanding addition and subtraction	Rapid recall of addition and subtraction facts
<p><b>Read and write numbers from 1 to 20 in numerals and words.</b></p> <p><b>Given a number, identify 1 more and 1 less</b> up to 20 then extending to up to 100.</p> <p>Count reliably at least 20 objects.</p> <p><b>Count read and write numbers to 100 in numerals.</b></p> <p><b>Count to and across 100, forwards and backwards, beginning with 0 or 1, or from any given number.</b></p> <p><b>Count in multiples of 2s, 5s and 10s</b></p> <p><b>Identify and represent numbers (up to 100) using objects and pictorial representations including the number line, and use the language of: equal to, more than, less than (fewer), most, least</b></p> <p>Describe and extend number sequences.</p> <p>Count on in twos from zero, then From different multiples, and begin to recognise odd or even numbers to about 20 as 'every other number'; count in steps of 5 from zero to 20 then from different multiples; count on in steps of 10 from different multiples.</p>	<p>Recognise what each digit in a two-digit number represents.</p> <p>Partition a 'teens' number and begin to partition larger two-digit numbers into a multiple of 10 and ones (TU). Know that 10 is made up of 10 ones.</p> <p>Understand and use the vocabulary of comparing and ordering numbers, including ordinal numbers to at least 20. Use the = sign to represent equality.</p> <p>Compare two familiar numbers, say which is more or less, and give a number which lies between them.</p> <p>To know that numbers that can be made out of groups of two are even numbers.</p> <p>To know that numbers that can't be made out of groups of two are odd numbers.</p> <p>Understand and use the vocabulary of estimation.</p> <p>Give a sensible estimate of a number of objects that can be checked by counting (e.g. up to about 30 objects)</p>	<p>Understand the operation of addition, and of subtraction (as 'take away', 'difference', and 'how many more to make'), and use the related vocabulary.</p> <p><b>Read, write and interpret mathematical statements involving +, – and = signs</b> to record mental calculations in a number sentence, and to recognise the use of symbols such as ■ or ▲ to stand for an unknown number.</p> <p><b>Represent and use number bonds and related subtraction facts within 20</b></p> <p>To begin to recognise that more than two numbers can be added together and that addition can be done in any order.</p>	<p><b>Add and subtract one-digit and two-digit numbers to 20, including zero.</b></p> <p><b>To solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as</b>  <math>7 = \square - 9</math></p> <p>Know addition doubles and halves of all numbers to at least 20.</p> <p>To solve word problems involving finding the difference and finding the sum of.</p>

## Year 1

Understanding multiplication and division Fractions	Reasoning and generalising about numbers or shapes/ money and measures	Measurement	Geometry - properties of shapes - position and direction
<p>Through grouping and sharing small quantities, pupils begin to understand: multiplication and division; doubling numbers and quantities; and finding simple fractions of objects, numbers and quantities.</p> <p><b>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.</b></p> <p>They make connections between arrays, number patterns and counting in twos, fives and tens.</p> <p><b>Fractions:</b></p> <p><b>Recognise, find and name a half as 1 of 2 equal parts of an object, shape or quantity</b></p> <p><b>Recognise, find and name a quarter as 1 of 4 equal parts of an object, shape or quantity</b></p>	<p><b>Reasoning and generalising about numbers or shapes:</b></p> <p>Solve simple mathematical problems or puzzles; recognise and predict from simple patterns and relationships. Suggest extensions by asking ‘What if...?’ or ‘What could I try next?’ Investigate a general statement about familiar numbers or shapes by finding examples that satisfy it.</p> <p><b>Solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as <math>7 = \square - 9</math></b></p> <p><b>Problems involving ‘real life’, money and measures:</b></p> <p>Use mental strategies to solve simple single step problems set in ‘real life’, money or measurement contexts, using counting, addition, subtraction, doubling and halving, explaining methods and reasoning orally.</p> <p><b>Recognise and know the value of different denominations of coins and notes</b></p> <p>Work out how to pay an exact sum using the smallest number of coins and begin to find totals and change.</p> <p><b>Solving Problems - Making Decisions</b></p> <p>Choose and use appropriate number operations and mental strategies to solve problems.</p> <p>Solve simple word problems involving ‘lots of’, ‘groups of’ and ‘sharing’.</p> <p>To use informal jottings to represent the solution to a word problem e.g. part whole model, bar model, number frame etc</p>	<p><b>Compare, describe and solve practical problems for</b></p> <ul style="list-style-type: none"> <li>- lengths and heights (long/short, tall/short, double/half)</li> <li>- mass and weight (heavy/light, heavier/lighter than),</li> <li>- capacity and volume (full/empty, more/less than, half/quarter full)</li> <li>- time (quicker/slower, earlier/later).</li> </ul> <p>Measure and compare two lengths, masses or capacities by direct comparison, extend to more than two.</p> <p><b>Measure using non-standard or uniform units and measuring equipment and begin to record</b></p> <ul style="list-style-type: none"> <li>- lengths and heights,</li> <li>- mass/weight and capacity/volume</li> <li>- time (hours, minutes, seconds)</li> </ul> <p><b>Sequence events in chronological order using language (e.g. before and after, next, first, today, yesterday, tomorrow, morning, afternoon and evening.</b></p> <p>Compare, describe and solve practical problems for: time (e.g. quicker, slower, earlier. later)</p> <p><b>Recognise the language relating to dates, including days of the weeks, months and years.</b></p> <p>Know the days of the week and the seasons of the year.</p> <p><b>Read the time to the hour and half past the hour on analogue clocks and draw the hands on a clock face to show these times</b></p> <p>Understand and use the vocabulary related to time.</p> <p>To use and apply knowledge to fractions and telling the time/conversion of time.</p>	<p><b>Recognise and name common 2-D and 3D shapes including</b></p> <ul style="list-style-type: none"> <li>- 2-D shapes ( rectangles, squares, circles and triangles)</li> <li>- 3-D shapes (cuboids, cubes, pyramids and spheres)</li> </ul> <p>Make and describe shape models, shape patterns and pictures using construction kits, everyday materials.</p> <p>Use everyday language to describe features of familiar 3-D and 2-D shapes, referring to properties such as the shape of flat faces on a 3-D shape, the number of faces on a 3-D shape, corners (vertices) or the number and types of sides.</p> <p>Use one or more shapes to make, deceive and continue repeating patterns.</p> <p><b>To describe position, direction and movement, including half, quarter and three-quarter turns.</b></p> <p>Use everyday language to describe position, direction and movement.</p> <p>Talk about things that turn. Make whole turns and half turns, quarter turns and three-quarter turns.</p>

## Year 2

Counting, properties of numbers and number sequences	Place Value and Ordering and rounding	Understanding addition and subtraction	Rapid recall of addition and subtraction facts
<p><b>Count on and back in steps of 2, 3 and 5 from 0, then from and back to any given small number.</b></p> <p>Count on in 10s from any given number, forward and backward.</p> <p>Count reliably up to 100 objects by grouping them: for example, in tens, then in fives or twos.</p> <p>Describe and extend simple number sequences: count on or back in ones or tens, starting from any two- digit number.</p> <p>Count in hundreds from and back to zero; count on in twos from and back to zero or any small number, and recognise odd and even numbers to at least 30.</p> <p>Begin to recognise two-digit multiples of 2, 5 or 10.</p>	<p><b>Read and write numbers to at least 100 in numerals and words.</b></p> <p><b>Recognises the place value of each digit in a two-digit number</b>, including 0 as a place holder, and partition two-digit numbers into a multiple of ten and ones (TU).</p> <p><b>Identify, represent and estimate numbers using different representations, including the number line.</b></p> <p><b>Compare and order numbers, from 0 to 100. Use the &lt;, &gt; and = sign to represent equality.</b></p> <p><b>Use place value and number facts to solve problems.</b></p> <p>Compare two given two-digit numbers, say which is more or less, and give a number which lies between them.</p> <p>Say the number that is 1 or 10 more or less than any given two-digit number to 100</p> <p>Use and begin to read the vocabulary of estimation and approximation; give a sensible estimate of at least 50 objects.</p> <p>Begin to round numbers less than 100 to the nearest 10.</p>	<p><b>Add and subtract numbers using concrete objects and pictorial representations and mentally, including:</b></p> <ul style="list-style-type: none"> <li>- a two-digit number and ones</li> <li>- a two-digit number and tens</li> <li>- two two-digit numbers</li> <li>- adding three one-digit numbers</li> </ul> <p><b>Solve problems with addition and subtraction;</b></p> <ul style="list-style-type: none"> <li>- using concrete objects and pictorial representations, including those involving number, quantities and measures</li> <li>- applying their increasing knowledge of mental and written methods.</li> </ul> <p><b>Show that addition of two numbers can be done in any order, but subtraction of one number from another cannot: for example, <math>3 + 21 = 21 + 3</math>, but <math>21 - 3 \neq 3 - 21</math>.</b></p> <p><b>Recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems.</b></p> <p>Understand that more than two numbers can be added.</p>	<p><b>Recall and use addition and subtraction facts to 20 fluently and derive and use related facts to 100</b></p> <p>Recall doubles and halves of numbers to 100 mentally</p>

## Year 2

Understanding multiplication and division	Reasoning and generalising about numbers or shapes	Measurement	Geometry - properties of shapes - position and direction
<p>Understand the operation of multiplication as repeated addition or as describing an array, and begin to understand division as grouping (repeated subtraction) or sharing.</p> <p><b>Calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication <math>\times</math>, division <math>\div</math> and equals <math>=</math> signs</b></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 and division facts, including problems in contexts</p> <p>Recognise the use of a symbol such as <math>\blacksquare</math> or <math>\blacktriangle</math> to stand for an unknown number.</p> <p>Know and use halving as the inverse of doubling.</p> <p><b>Rapid recall of multiplication and division facts</b></p> <p>Recall and use multiplication and division facts for the 2, 5 and 10 times-tables including odd and even numbers, doubles and halves of numbers to 100.</p> <p>Use known number facts and place value to carry out mentally simple multiplications and divisions.</p> <p><b>Fractions:</b></p> <p>Write simple fractions, for example <math>\frac{1}{2}</math> of 6 = 3 and recognise the equivalence of <math>\frac{2}{4}</math> and <math>\frac{1}{2}</math>.</p> <p>Begin to recognise that two halves or four quarters make one whole and that two quarters and one half are equivalent.</p> <p>Recognise, find, name and write fractions (<math>\frac{1}{3}</math>, <math>\frac{1}{4}</math>, <math>\frac{2}{4}</math>, <math>\frac{3}{4}</math>) of a length, shape, set of objects or quantity.</p>	<p><b>Reasoning and generalising about numbers or shapes:</b></p> <p>Solve mathematical problems or puzzles, recognise simple patterns and relationships, generalise and predict. Suggest extensions by asking 'What if...?' or 'What could I try next'</p> <p>Investigate a general statement about familiar numbers or shapes by finding examples that satisfy it.</p> <p>Explain how a problem was solved orally and, where appropriate, in writing.</p> <p><b>Problems involving 'real life', money and measures:</b></p> <p>Use mental addition and subtraction, simple multiplication and division, to solve simple word problems involving numbers in 'real life', money or measures, using one or two steps. -Explain how the problem was solved.</p> <p>Recognise and use symbols for pounds (£) and pence (p); combine amounts to make a particular value.</p> <p>Find different combinations of coins that equal the same amounts of money.</p> <p>Find totals, give change, and work out which coins to pay .</p> <p><b>Solving Problems - Making Decisions</b></p> <p>Choose and use appropriate operations and efficient calculation strategies (e.g. mental, mental with jottings) to solve problems.</p>	<p><b>Measurement:</b></p> <p>Compare and order lengths, mass, volume/ capacity and record the results using <math>&gt;</math>, <math>&lt;</math> and <math>=</math></p> <p>Choose and use appropriate standard units to estimate and measure length/height in any direction (m/cm); mass (kg/g); temperature (<math>^{\circ}</math> C); capacity (litres/ml) to the nearest appropriate unit, using rulers, scales, thermometers and measuring vessels.</p> <p>Read a simple scale to the nearest labelled division, including using a ruler to draw and measure lines to the nearest centimetre, recording estimates and measurements as '3 and a bit metres long' or 'about 8 centimetres' or 'nearly 3 kilograms heavy'.</p> <p>Recognise and use symbols for pounds (£) and pence (p); combine amounts to make a particular value.</p> <p>Find different combinations of coins that equal the same amounts of money.</p> <p>Solve simple problems in a practical context involving addition and subtraction of money, including giving change.</p> <p>Tell and write the time to the hour, half hour or quarter hour and then to 5 minutes including quarter past /to the hour and draw the hands in a clock face to show these times.</p> <p>Know the number of minutes in an hour, and hours in a day.</p> <p>Compare and sequence intervals of time.</p> <p><b>Statistics:</b></p> <p>Solve a given problem by sorting, classifying and organising information in simple ways, such as: in a list or simple table; in a pictogram; in a block graph.</p> <p>Interpret and construct simple pictograms, tally chars, block diagrams and tables</p> <p>Ask and answer simple questions by counting the number of objects in each category and sorting the categories by quantity</p> <p>Ask and answer questions about totalling and comparing categorical data</p>	<p>Identify and describe the properties of 2-D shapes, including the number of sides and lines of symmetry in a vertical line.</p> <p>Identify and describe the properties of 3-D shapes, including the number of edges, vertices and faces.</p> <p>Identify 2-D shapes on the surface of 3-D shapes (e.g. a circle on a cylinder and a triangle on a pyramid)</p> <p>Compare and sort common 2-D and 3-D shapes and everyday objects, such as the number of sides and corners, symmetry (2-D shapes), or the shapes of faces and number of faces, edges and corners (3-D shapes).</p> <p>Use mathematical vocabulary to describe position, direction and movement: for example, describe, place, tick, draw or visualise objects in given positions.</p> <p>Organise and arrange combinations of mathematical objects in patterns and sequences.</p> <p>Recognise whole, half, quarter, three quarter and full turns, to the left or right, clockwise or anti-clockwise.</p> <p>Know that a right angle is a measure of a quarter turn, and recognise right angles in squares and rectangles.</p> <p>Give instructions for moving along a route in straight lines and round right-angled corners: for example, to pass through a simple maze, including programming robots.</p>

### Year 3

Counting, properties of numbers and number sequences	Place Value and Ordering and rounding	Understanding addition and subtraction	Rapid recall of addition and subtraction facts and pencil and paper procedures (+ and -)
<p><b>Count on from 0 in multiples of 2, 3, 4, 5, 8, 50 and 100; find 10 or 100 more or less than a given number</b></p> <p>Count larger collections by grouping them: for example, in tens, then other numbers. E.g. Can I count 47 objects by grouping them into 5s? 10s?</p> <p>Describe and extend number sequences: count on or back in tens or hundreds, starting from any two-digit or three-digit number.</p> <p>Count on or back in twos starting from any two-digit number, and recognise odd and even numbers to at least 100;</p> <p>Recognise two-digit and three-digit multiples of 2, 5 or 10, and three-digit multiples of 50 and 100.</p>	<p><b>Read and write whole numbers to at least 1000 in numerals and in words.</b></p> <p><b>Compare and order numbers up to 1000, and position them on a number line.</b></p> <p><b>Recognise the place value of each digit in a three-digit number</b> and partition three-digit numbers into a multiple of 100, a multiple of ten and units (HTU).</p> <p>Compare two given three-digit numbers, say which is more or less, and give a number which lies between them.</p> <p><b>Identify, represent and estimate numbers using different representations.</b></p> <p><b>Solve number problems and practical problems involving these ideas.</b></p>	<p>Extend understanding that more than two numbers can be added; add three or four single-digit numbers mentally, or three or four two-digit numbers with the help of apparatus or pencil and paper and formal written methods.</p> <p><b>Estimate the answer of any addition or subtraction calculation using mental methods and use inverse operations to check answers.</b></p> <p>Understand that subtraction is the inverse of addition and utilise this to check answers.</p> <p><b>Solve problems, including missing number problems using known facts, place value and more complex addition and subtraction.</b></p>	<p><b>Rapid recall of addition and subtraction facts</b></p> <p>Know: all addition and subtraction facts for each number to 20; all pairs of multiples of 100 with a total of 1000 (e.g. 300 + 700).</p> <p>Derive quickly: all pairs of multiples of 5 with a total of 100 (e.g. 35 + 65).</p> <p><b>Add and subtract numbers mentally, including:</b></p> <ul style="list-style-type: none"> <li>- <b>A 3 digit number and ones</b></li> <li>- <b>A 3 digit number and tens</b></li> <li>- <b>3 digit number and hundreds</b></li> </ul> <p><b>Pencil and paper procedures</b></p> <p>Use informal and formal pencil and paper methods to support, record or explain HTU + and - TU, HTU + and - HTU.</p> <p><b>Add and subtract numbers with up to 3 digits, using formal written methods of column addition and subtraction</b>, only where a mental method is not appropriate</p> <p>Solve singles and two step problems involving multiplication and division.</p>

## Year 3

Understanding multiplication and division	Reasoning and generalising about numbers or shapes/ money and measures	Measurement	Geometry - properties of shapes -
<p><b>Understanding multiplication and division:</b></p> <p>Understand multiplication as repeated addition and extend understanding that multiplication can be done in any order.</p> <p>Understand division as grouping (repeated subtraction or sharing).</p> <p>Recognise that division is the inverse of multiplication, and that halving is the inverse of doubling.</p> <p><b>Rapid recall of multiplication and division facts</b></p> <p><b>Recall and use multiplication facts for the 2, 3, 4, 5, 8 and 20 times-tables.</b></p> <p><b>Through doubling, connect the 2, 4 and 8 multiplication tables and through halving connect the 5 and 10 multiplication tables.</b></p> <p>Derive division facts corresponding to the 2, 3, 4, 5, 8 and 10 times tables.; doubles of all whole numbers to at least 20 (e.g. <math>17 \div 17</math> or <math>17 \times 2</math>); doubles of multiples of 5 to 100 (e.g. <math>75 \times 2</math>, <math>90 \times 2</math>); doubles of multiples of 50 to 500 (e.g. <math>450 \times 2</math>); and all the corresponding halves (e.g. <math>36/2</math>, half of 130, <math>900/2</math>).</p> <p><b>Pencil and paper procedures (<math>\times</math> and <math>\div</math>)</b></p> <p><b>Write and calculate mathematical statements for multiplication and division using the multiplication tables they know, using 2 digit <math>\times</math> 1 digit numbers, using mental methods and progressing to formal written methods.</b></p> <p><b>Solve problems, including missing numbers problems involving multiplication and division, including positive integer scaling problems (4 x as high, 8 x as long) and correspondence problems in which n objects are connected to m objects.</b></p>	<p><b>Solving Problems - Making Decisions</b></p> <p>Choose and use appropriate operations (including multiplication and division) to solve word problems, and appropriate ways of calculating: mental, mental with jottings, pencil and paper.</p> <p>Utilise problem solving strategies using all four operations, including finding all possibilities, working backwards, finding rules and describing patterns, and making a table or list.</p> <p><b>Reasoning or generalising about numbers or shapes</b></p> <p>Solve mathematical problems or puzzles, recognise simple patterns and relationships, generalise and predict. Suggest extensions by asking 'What if...?'</p> <p>Investigate a general statement about familiar numbers or shapes by finding examples that satisfy it.</p> <p>Explain methods and reasoning orally and, where appropriate, in writing.</p> <p><b>Problems involving 'real life', money and measures:</b></p> <p>Solve word problems involving numbers in 'real life', money and measures, using one or more steps, including finding totals and giving change, and working out which coins to pay. Explain how the problem was solved.</p> <p><b>Recognise all coins and notes. Understand and use <math>\pounds</math>.p notation (for example, know that <math>\pounds 3.06</math> is <math>\pounds 3</math> and 6p).</b></p> <p>Use mental addition and subtraction, simple multiplication and division, to solve word problems involving numbers in 'real life', money or measures, using one or two steps.</p> <p>Find totals, give change, and work out which coins to pay.</p>	<p><b>Add and subtracts amounts of money to give change in <math>\pounds</math> and p in practical contexts.</b></p> <p><b>Measure the perimeter of simple 2-D shapes.</b></p> <p><b>Measure, compare, add and subtract: lengths (m/cm/mm); mass (kg/g); volume/capacity (l/ml), including using a ruler to draw and measure lines to the nearest half centimetre.</b></p> <p>Suggest suitable units and measuring equipment to estimate or measure length, mass or capacity and read and begin to write the vocabulary related to these.</p> <p>Read scales to the nearest division (labelled or unlabelled).</p> <p>Record estimates and measurements to the nearest whole or half unit (e.g. 'about 3.5kg'), or in mixed units (e.g. '3m and 20cm').</p> <p><b>Estimate and read time with increasing accuracy to the nearest minute; record and compare time in term of seconds, minutes and hours; use vocabulary of o'clock, am/pm, morning/afternoon, noon/ midnight</b></p> <p><b>Tell and write the time from an analogue clock including using roman Numerals from I to XII and 12 and 24 hour clocks.</b></p> <p><b>Know the number of seconds in a minute and the number of days in each month, year and leap year.</b></p> <p><b>Compare durations of events.</b></p>	<p><b>Draw 2 shapes and make 3D shapes using modelling materials; recognise 3D shapes in different orientations.</b></p> <p>Classify and describe the properties of 3-D and 2-D shapes, including the hemisphere, prism, semi-circle, quadrilateral referring to properties e.g the number or shapes of faces, the number of sides/edges and vertices, whether sides/edges are the same length and angles greater/less than a right angle. .</p> <p>Identify and sketch lines of symmetry in simple 2D shapes, and recognise shapes with no lines of symmetry.</p> <p>Sketch the reflection of a simple shapes in a mirror line along one edge.</p> <p><b>Recognise angles as a property of shape or a description of a turn.</b></p> <p><b>Identify right angles, recognise that two right angles make a half turn, three make three quarters and four complete a turn; Identify whether angles are greater or less than a right angle.</b></p> <p><b>Identify horizontal and vertical lines and pairs of perpendicular and parallel lines.</b></p> <p>Read and begin to write the vocabulary related to position, direction and movement: for example, describe and find the position of a square on a grid of squares with the rows and columns labelled.</p>

### Year 3

Fractions	Checking results of calculations	Statistics
<p>Recognise fractions are an equal part of a whole.</p> <p><b>Count up and down in tenths; Recognise that tenths arise from breaking down an object into ten equal parts and dividing numbers or quantities by 10.</b></p> <p><b>Recognise, find and write fractions of a discrete set of objects: unit fractions and non-unit fractions with small denominators.</b></p> <p><b>Recognise and use fractions as numbers: unit fractions and non-unit fractions with small denominators.</b></p> <p><b>Recognise and show, using diagrams, equivalent fractions with small denominators e.g five tenths and one half, five fifths and one whole.</b></p> <p><b>Compare and order unit fractions, and fractions with the same denominator.</b></p> <p><b>Add and subtract fractions with the same denominator within one whole.</b></p> <p><b>Solve problems and word problems involving all fraction objectives above.</b></p> <p>Recognise that unit fractions such as <math>\frac{1}{2}</math>, <math>\frac{1}{3}</math>, <math>\frac{1}{4}</math>, <math>\frac{1}{5}</math>, <math>\frac{1}{10}</math> and use them to find fractions of shapes and numbers.</p> <p>Begin to recognise simple fractions that are several parts of a whole, such as <math>\frac{3}{4}</math>, <math>\frac{2}{3}</math>, or <math>\frac{3}{10}</math>.</p>	<p>Check subtraction with addition, halving with doubling and division with multiplication.</p> <p>Repeat addition or multiplication in a different order.</p> <p>Check with an equivalent calculation.</p>	<p><b>Interpret and present data using bar charts, pictograms and tables.</b></p> <p><b>Solve one and two-step questions [e.g, 'How many more?' And 'How many fewer?'] using information presented in scaled bar charts and pictograms and tables.</b></p> <p>Pupils understand and use simple scales (e.g 2, 5, 10 units) in bar charts and pictograms with increasing accuracy.</p> <p>Continue to interpret data in many contexts.</p>

## Year 4

Counting, properties of numbers and number sequences	Place Value, Ordering and Rounding	Fractions including Decimals	Understanding addition and subtraction
<p><b>Count backwards through 0 to include negative numbers</b></p> <p>Recognise and extend number sequences formed by counting from any number in steps of constant size, extending beyond zero when counting back: for example, count on in steps of 25 to 500, and then back to, say, –100.</p> <p>Recognise odd and even numbers up to 1000, and some of their properties, including the outcome of sums or differences of pairs of odd/ even numbers.</p> <p>Recognise multiples of 2, 3, 4, 5 and 10, up to the tenth multiple.</p> <p>Practice counting using simple fractions and decimals, both forwards and backwards.</p>	<p><b>Count in multiples of 6, 7, 9, 25 and 100.</b></p> <p><b>Order and compare numbers beyond 1000</b></p> <p>Read and write the vocabulary of comparing and ordering numbers. Use symbols correctly, including less than (&lt;), greater than (&gt;), equals (=).</p> <p>Read and write whole numbers to at least 10,000 in figures and words</p> <p>Give one or more numbers lying between two given numbers and order a set of whole numbers less than 10000.</p> <p><b>Identify, represent and estimate numbers using different representations.</b></p> <p><b>Find 1000 more or less than a given number</b></p> <p><b>Recognise the place value of each digit in a four-digit number.</b></p> <p>Partition numbers into thousands, hundreds, tens and ones.</p> <p>Multiply or divide any integer up to 1000 by 10 (whole-number answers), and understand the effect.</p> <p><b>Round any number less than 10000 to the nearest 10 100 or 1000.</b></p> <p><b>Read and write Roman Numeral to 100</b></p> <p><b>Solve number and practical problems that involve all of the above and with increasingly large positive numbers.</b></p>	<p><b>Recognise and show the equivalence of simple fractions (e.g. fractions equivalent to <math>\frac{1}{2}</math>, <math>\frac{1}{4}</math> or <math>\frac{3}{4}</math>) using diagrams and families of equivalents.</b></p> <p><b>Recognise and write decimal equivalents to <math>\frac{1}{4}</math>, <math>\frac{1}{2}</math> and <math>\frac{3}{4}</math></b></p> <p>Recognise the equivalence between the decimal and fraction forms of one half, one quarter, three quarters, and tenths such as 0.3.</p> <p><b>Count up and down in hundredths; recognise that hundredths arise when dividing objects by 100 and dividing tenths by 10.</b></p> <p><b>Solve problems with increasingly harder fractions to calculate quantities, and fractions to divide quantities, including non unit fractions where the answer is a whole number.</b></p> <p><b>Add and subtract fractions with the same denominator.</b></p> <p><b>Recognise and write decimal equivalents to any number of tenths or hundredths and use it in context.</b> For example: amounts of money; convert a sum of money such as £13.25 to pence, or a length such as 125 cm to metres; round a sum of money to the nearest pound.</p> <p><b>Find the effect of dividing and one or two digit number by 10 and 100, identifying the value of the digits in the answers as ones, tenths and hundredths.</b></p> <p><b>Round decimals with one decimal place to the nearest whole number.</b></p> <p><b>Compare numbers with the same number of decimal places up to two decimal places.</b></p> <p><b>Solve simple measure and money problems involving fractions and decimals to two decimal places.</b></p> <p>Recognise simple fractions that are several parts of a whole, such as <math>\frac{2}{3}</math> or <math>\frac{5}{8}</math>, and mixed numbers.</p> <p>Identify two simple fractions with a total of 1 (e.g. <math>\frac{3}{10}</math> and <math>\frac{7}{10}</math>).</p> <p>Order simple fractions: for example, decide whether fractions such as <math>\frac{3}{8}</math> or <math>\frac{7}{10}</math> are greater or less than one half.</p> <p>Begin to relate fractions to division and find simple fraction such as <math>\frac{1}{2}</math>, <math>\frac{1}{3}</math>, <math>\frac{1}{4}</math>, <math>\frac{1}{5}</math>, <math>\frac{1}{10}</math> of numbers, quantities or shapes</p>	<p>Consolidate understanding of relationship between + and –.</p> <p>Understand the principles (not the names) of the commutative and associative laws as they apply or not to addition and subtraction</p>

## Year 4

Rapid recall of addition and subtraction facts and Pencil and paper procedures (+ and -)	Understanding multiplication and division	Reasoning and generalising about numbers or shapes/ money and measures	Statistics
<p>Consolidate knowing by heart: addition and subtraction facts for all numbers to 20.</p> <p>Derive quickly: all number pairs that total 100 (e.g. 62 + 38, 75 + 25, 40 + 60); all pairs of multiples of 50 with a total of 1000 (e.g. 850 + 150).</p> <p>Mentally add/subtract 1, 10, 100 or 1000 to/ from any integer, and count on or back in tens, hundreds or thousands from any whole number up to 10000.</p> <p style="text-align: center;"><b>Pencil and paper procedures (+ and -)</b></p> <p>Develop and refine mental addition and subtraction methods with increasingly large numbers to aid fluency. (See mental strategies document)</p> <p><b>Add and subtract numbers with up to four digits using the formal written methods of column addition and subtraction, where appropriate.</b></p> <p><b>Solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why.</b></p>	<p>Extend understanding of the operations of <math>\times</math> and <math>\div</math>, and their relationship to each other and to + and -.</p> <p>Understand the principles (not the names) of the commutative, associative and distributive laws as they apply to multiplication.</p> <p style="text-align: center;"><b>Rapid recall of multiplication and division facts</b></p> <p><b>Know: All multiplication and division facts for all tables up to 12 x 12</b></p> <p><b>Use place value, known and derived facts to divide and multiply mentally, including by 0 and 1; dividing by 1; multiplying together 3 numbers.</b></p> <p><b>Recognise and use factor pairs in mental calculations</b> (divide by 2 and then 3 to divide by 6, or multiply by 3 then 10 to multiply by 30) <b>and commutativity in mental calculations</b></p> <p>Begin to know: multiplication facts for 6, 7, 8 and 9 times-tables.</p> <p>Derive quickly: doubles of all whole numbers to 50 (e.g. 38 + 38, or 38 x 2); doubles of multiples of 10 to 500 (e.g. 460 x 2); doubles of multiples of 100 to 5000 (e.g. 3400 x 2); and the corresponding halves 1 (e.g. 74 <math>\div</math> 2, 1/2 of 420, half of 3800).</p> <p style="text-align: center;"><b>Pencil and paper procedures (<math>\times</math> and <math>\div</math>)</b></p> <p>To approximate first.</p> <p>Use formal and informal pencil and paper methods to support, record or explain multiplications and divisions.</p> <p><b>Multiply two-digit and three-digit numbers by a one-digit number using formal written layout</b></p> <p>Multiply and divide using formal and informal written methods, including partitioning and grouping.</p>	<p style="text-align: center;"><b>Solving Problems - Making Decisions</b></p> <p>Choose and use appropriate number operations and appropriate ways of calculating (mental, mental with jottings, pencil and paper) to solve problems.</p> <p>Solve problems involving multiplying and adding, including using the distributive law to multiply <math>TU \times U</math>, integer scaling problems.</p> <p>Utilise problem solving strategies 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;"><b>Reasoning or generalising about numbers or shapes</b></p> <p>Explain methods and reasoning about numbers orally and in writing.</p> <p>Solve mathematical problems or puzzles, recognise and explain patterns and relationships, generalise and predict. Suggest extensions by asking 'What if...?'</p> <p>Make and investigate a general statement about familiar numbers or shapes by finding examples that satisfy it.</p> <p><b>Problems involving 'real life', money and measures:</b></p> <p>Use all four operations to solve word problems involving numbers in 'real life', money and measures (including time), using one or more steps, including converting pounds to pence and metres to centimetres and vice versa.</p> <p>Addition and subtraction of two numbers in money calculations (for example, £7.85 <math>\pm</math> £3.49).</p>	<p><b>Interpret and present discrete and continuous data using appropriate graphical methods, including bar charts and time graphs.</b></p> <p><b>Solve comparison, sum and difference problems using information presented in bar charts, pictograms, table and other graphs.</b></p> <p>Solve a problem by collecting quickly, organising, representing and interpreting data in tables, charts, graphs and diagrams, including those generated by a computer, for example: tally charts and frequency tables; pictograms – symbol representing 2, 5, 10 or 20 units; bar charts – intervals labelled in 2s, 5s, 10s or 20s; Venn and Carroll diagrams (two criteria).</p>

## Year 4

Measurement	Geometry - properties of shapes -	Geometry - position and direction	Checking results of calculations
<p><b>Convert between different units of measure (km to m, hour to minute, g to kg etc).</b></p> <p>Use, read and write standard metric units (km, m, cm, mm, kg, g, l, ml), including their abbreviations.</p> <p>Know the equivalent of one half, one quarter, three quarters and one tenth of 1 km, 1 m, 1 kg, 1 litre</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><b>Estimate, compare and calculate different measures, including money in pounds and cm and m. Relate to decimals and hundredths.</b></p> <p><b>Measure and calculate the perimeter of rectilinear figure (including squares) in cm and m</b></p> <p>Represent and understand perimeter algebraically as <math>2(a+b)</math> where a and b are the dimensions in the same unit.</p> <p><b>Find the area of rectilinear shapes by counting squares and then by using formula. <math>A = L \times W</math></b></p> <p><b>Read, write and convert between analogue and digital 12 hour and 24 hour clocks</b></p> <p><b>Solve problems involving converting from hours to minutes; minutes to seconds; years to months; weeks to days.</b></p>	<p>Describe and visualise 3-D and 2-D shapes, including the tetrahedron and heptagon.</p> <p><b>Classify and compare geometric shapes, including quadrilaterals (parallelogram, rhombus, trapezium) and triangles (isosceles, equilateral, scalene) based on their properties and sizes</b></p> <p><b>Identify lines of symmetry in 2-D shapes presented in different orientations.</b></p> <p><b>Complete a simple symmetric figure with respect to a line of symmetry.</b></p> <p><b>Identify acute and obtuse angles in and compare and order angles up to two right angles by size.</b></p> <p>Begin to know that angles are measured in degrees and that: one whole turn is <math>360^\circ</math> or 4 right angles; a quarter turn is <math>90^\circ</math> or one right angle; half a right angle is <math>45^\circ</math>.</p> <p>Start to compare and order angles and compare lengths and angles to decide if a polygon is regular or irregular.</p>	<p><b>Describe position on a 2D grid as co-ordinates in the first quadrant.</b></p> <p><b>Describe movements between position as translations.</b></p> <p><b>Plot specified points and draw sides to complete a given polygon.</b></p> <p>Draw a pair of axes in one quadrant, with equal scales and integer labels.</p> <p>Use the eight compass directions N, S, E, W, NE, NW, SE, SW.</p> <p>Make and measure clockwise and anti-clockwise turns: for example, from SW to N, or from 4 to 10 on a clock face.</p>	<p><b>Estimate and use inverse operations to check the results to a calculation.</b></p> <p>Check the sum of several numbers by adding in reverse order.</p> <p>Check with an equivalent calculation.</p> <p>Use knowledge of sums or differences of odd/even numbers.</p>

## Year 5

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 formed by counting from any number in steps of constant size, extending beyond zero when counting back into negative numbers. E.g: count on in steps of 25 to 1000, and then back; count on or back in steps of 0.1, 0.2, 0.3...</p> <p>Make general statements about odd or even numbers, including the outcome of sums and differences.</p> <p>Know and apply tests of divisibility by 2, 4, 5, 10 or 100.</p> <p><b>Recognise multiples of 3, 4, 5, 6, 7, 8, 9, up to the 10th multiple.</b></p> <p><b>Identify factors, including finding all factor pairs of a number, and common factors of two numbers</b></p> <p><b>Read, write and use Roman Numerals to 1000</b></p> <p><b>Establish whether a number up to 100 is a prime number and recall prime numbers to 19</b></p> <p><b>Recognise and use squared and cubed numbers, using the correct notation</b></p> <p><b>Solve problems involving multiplication and division including use of factors, multiples, prime, square and cubed numbers.</b></p> <p><b>Pupils use and explain the equals sign to indicate equivalence, including in missing number problems (for example, <math>13 + 24 = 12 + 25</math>; <math>35 = 5 \times ?</math>)</b></p>	<p><b>- Read, write and order numbers to at least 1,000,000 and determine the value of each digit</b></p> <p><b>- Count forward or backwards in steps of powers of 10 for any given number up to 1,000,000</b></p> <p><b>- Multiply and divide any positive integer up to 10000 by 10 or 100 and 1000 and understand the effect. Relate to conversion of measures (e.g. <math>9900 \div 10</math>, <math>737 \div 10</math>, <math>2060 \div 100</math>).</b></p> <p>- Use the vocabulary of comparing and ordering numbers, including symbols such as <math>&lt;</math>, <math>&gt;</math>, <math>=</math></p> <p>- Give one or more numbers lying between two given numbers. Order a set of integers less than 1 million.</p> <p><b>- Interpret negative numbers in context and count forwards and backwards with positive and negative whole numbers, including through zero</b></p> <p>- Use the vocabulary of estimation and approximation. Make and justify estimates of large numbers, and estimate simple proportions such as one third, seven tenths.</p> <p><b>- Round any number up to 1,000,000 to the nearest 10, 100, 1000, 10,000 and 100,000</b></p> <p>- Order a given set of positive and negative integers (e.g. on a number line, on a temperature scale). Calculate a temperature rise or fall across <math>0^{\circ}\text{C}</math>.</p> <p><b>- Solve number problems and practical problems involving all of the above</b></p>	<p>Derive quickly or continue to derive quickly: decimals that total 1 (e.g. <math>0.2 + 0.8</math>) or 10 (e.g. <math>6.2 + 3.8</math>); all two-digit pairs that total 100 (e.g. <math>43 + 57</math>);</p> <p>all pairs of multiples of 50 with a total of 1000 (e.g. <math>350 + 650</math>).</p> <p><b>Add and subtract numbers mentally with increasingly large numbers</b></p>	<p>Use informal and formal pencil and paper methods to support, record or explain additions and subtractions.</p> <p><b>Extend written methods to: column addition/ subtraction of whole numbers with more than 4 digits.</b></p> <p>Addition or subtraction of a pair of decimals, both with one or both with two decimal places (e.g. <math>\pounds 29.78 + \pounds 53.34</math>)</p> <p><b>Use rounding to check answers to calculations and determine the levels of accuracy.</b></p> <p><b>Solve multi-step addition and subtraction problems in multiple contexts deciding which operations and methods to use and why.</b></p>

## Year 5

Understanding multiplication and division	Rapid recall of multiplication and division facts	Pencil and paper procedures ( $\div$ and $\times$ )	Checking results of calculations
<p>Understand the effect of and relationships between the four operations, and the principles (not the names) of the arithmetic laws as they apply to multiplication. Begin to use brackets.</p> <p>Begin to express a quotient as a fraction, or as a decimal when dividing a whole number by 2, 4, 5 or 10, or when dividing £.p.</p> <p>Round up or down after division, depending on the context</p>	<p>Know by heart all multiplication facts up to <math>10 \times 10</math>.</p> <p>Derive quickly or continue to derive quickly: division facts corresponding to tables up to <math>12 \times 12</math> doubles of all whole numbers 1 to 100 (e.g. <math>78 \times 2</math>);</p> <p>doubles of multiples of 10 to 1000 (e.g. <math>670 \times 2</math>);</p> <p>doubles of multiples of 100 to 10 000 (e.g. <math>6500 \times 2</math>); and the corresponding halves</p> <p><b>Multiply and divide numbers mentally drawing upon known facts</b></p> <p><b>Multiply and divide whole numbers and those involving decimals by 10, 100 and 1000</b></p>	<ul style="list-style-type: none"> <li>- Use formal and informal pencil and paper methods to support, record or explain multiplications and divisions.</li> <li>- <b>Multiply numbers up to 4 digits by a one or two digit number using a formal written method, including long multiplication</b></li> <li>- <b>Divide numbers up to 4 digits by a one digit number using the formal written method of short division and interpret remainder's appropriately according to the context.</b></li> <li>- Pupils use multiplication and division as inverses to support the introduction of ratio in year 6, for example, by multiplying and dividing by powers of 10 in scale drawings or by multiplying and dividing by powers of a 1000 in converting between units such as kilometres and metres.</li> <li>- Understand the terms factor, multiple and prime, square and cube numbers and use them to construct equivalence statements (for example, <math>4 \times 35 = 2 \times 2 \times 35</math>; <math>3 \times 270 = 3 \times 3 \times 9 \times 10 = 92 \times 10</math>).</li> <li>-</li> </ul>	<p>Check the sum of several numbers by adding in the reverse order.</p> <p>Check with an equivalent calculation.</p>

## Year 5

Fractions including decimals and percentages	Reasoning and generalising and numbers or shapes	Problems involving 'real life' money and measures	Solving problems and making decisions
<p>-Count up and down in tenths</p> <p><b>-compare and order fractions, including on a number line, whose denominators are all multiples of the same number</b></p> <p><b>- identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths</b></p> <p><b>- recognise mixed numbers and improper fractions and convert from one form to the other and write mathematical statements <math>&gt; 1</math> as a mixed number [for example, <math>2/5 + 4/5 = 6/5 = 1 \frac{1}{5}</math>]</b></p> <p><b>- add and subtract fractions with the same denominator and denominators that are multiples of the same number</b></p> <p><b>- multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams</b></p> <p><b>- read and write decimal numbers as fractions [for example, <math>0.71 = 71/100</math>]</b></p> <p><b>- recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents</b></p> <p><b>- round decimals with 2dp to the nearest whole number and to 1dp</b></p> <p><b>- read, write, order and compare numbers with up to 3dp</b></p> <p><b>- solve problems involving number up to 3dp</b></p> <p><b>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, and as a decimal</b></p> <p><b>- solve problems which require knowing percentage and decimal equivalents of <math>\frac{1}{2}</math> <math>\frac{1}{4}</math> <math>\frac{1}{5}</math> <math>\frac{2}{5}</math> <math>\frac{4}{5}</math> and those fractions with a denominator of a multiple of 10 or 25</b></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>Explain a generalised relationship (formula) in words</p>	<p>Use all four operations to solve simple word problems involving numbers and quantities based on 'real life', money and measures (including time), using one or more steps, including making simple conversions of pounds to foreign currency and finding simple percentages.</p> <p>Utilise problem solving strategies using all four operations, including finding all possibilities, working backwards, finding rules and describing patterns, and making a table or list</p> <p><b>Solve problems involving multiplication and division, including scaling by simple fractions (ration and proportion) and problems involving simple rates</b></p> <p><b>E.g If a car travels 300 miles in 6 hours, how far would we expect it to travel in 2 hours?</b></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 using all four operations, including finding all possibilities, working backwards, finding rules and describing patterns, and making a table or list</p>

## Year 5

Statistics	Measurement - mass, length, capacity and time	Measurement - area, perimeter and volume	Geometry - properties of shapes and position and direction
<p>Solve problems by representing and interpreting data in tables, charts, graphs and diagrams, including those generated by a computer, for example: bar line charts, vertical axis labelled in 2s, 5s, 10s, 20s or 100s, first where intermediate points have no meaning (e.g. scores on a dice rolled 50 times), then where they may have meaning (e.g. room temperature over time).</p> <p><b>Solve comparison, sum and difference problems using of a set of data and using line graphs.</b></p> <p><b>Complete, read and interpret information in a variety of tables, graphs and diagrams, including timetables, line graphs, bar charts Venn and Carroll diagrams</b></p>	<p>Use, read and write standard metric units (km, m, cm, mm, kg, g, l, ml), including their abbreviations, and relationships between them.</p> <p><b>Convert between different units of metric measure (e.g. km to m, m to cm or mm, kg to g, l to ml) and vice versa by multiplying and dividing by 10,100 and 100</b></p> <p><b>Understand and use approximate equivalences between metric and imperial units such as miles, pints, pounds and gallons</b></p> <p>Suggest suitable units and measuring equipment to estimate or measure length, mass or capacity.</p> <p>Measure and draw lines to the nearest millimetre.</p> <p>Record estimates and readings from scales to a suitable degree of accuracy.</p> <p><b>Use all four operations to solve problems and problem solve involving measures and conversion, including scaling.</b></p> <p>Use units of time; read the time on a 24-hour digital clock and use 24-hour clock notation, such as 19:53. Use timetables.</p> <p><b>Solve problems involving converting between units of time.</b></p>	<p>Measure and understand area measured in square centimetres (cm<sup>2</sup>)</p> <p>Understand and use the formula in words 'length ´ breadth' for the area of a rectangle.</p> <p>Calculate and compare the perimeter of composite rectilinear shapes in cm and</p> <p>Calculate the area from scale drawings using given measurements</p> <p><b>Measure and calculate the perimeter of composite rectilinear shapes in centimetres and metres</b></p> <p><b>Calculate and compare the area of rectangles (including squares), and including using standard units, square centimetres (cm<sup>2</sup>) and square metres (m<sup>2</sup>) and estimate the area of irregular shapes</b></p> <p><b>Estimate volume [for example, using 1 cm<sup>3</sup> blocks to build cuboids (including cubes) and capacity [for example, using water]</b></p>	<p>- Classify triangles (isosceles, equilateral, scalene), using criteria such as equal sides, equal angles, lines of symmetry.</p> <p>- <b>Know angles are measured in degrees; estimate, measure, draw and compare acute, obtuse and reflex angles</b></p> <p>- <b>Visualise 3-D shapes from 2-D representations, including nets</b></p> <p>- Recognise reflective symmetry in regular polygons: for example, know that a square has four axes of symmetry and an equilateral triangle has three.</p> <p>- <b>know angles are measured in degrees</b></p> <p>- <b>draw given angles and measure them in degrees</b></p> <p>- <b>Identify , estimate and compare acute, obtuse and reflex angles.</b></p> <p>- <b>Identify angles at a point (one whole turn) on a straight line, 180 degree turn and other multiples of 90</b></p> <p>- Calculate missing angles in polygons and on a straight line by deducing related facts and missing angles</p> <p>- <b>Use the properties of polygons, including rectangles and squares, to deduce facts and missing lengths and angles.</b></p> <p style="text-align: center;"><b>Position and direction</b></p> <p>- <b>identify, describe and represent where a shape will be after a translation and know the shape has not changed.</b></p> <p>- Recognise positions and directions: read and plot co-ordinates in the first quadrant; recognise perpendicular and parallel lines.</p> <p>- <b>identify, describe and represent where a shape will be after reflection in a mirror line</b></p>

**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><b>Recognise squares of numbers to at least 12 x 12, and cubed numbers</b></p> <p><b>Identify common factors, common multiples and prime numbers up to 20</b> and factorise numbers up to 100</p>	<p><b>Multiply and divide decimals mentally by 10 or 100, and integers by 1000, giving answers to 3dp</b> and explain the effect and relate to conversion of measurements e.g. g to kg, cm to m, mm to cm.</p> <p><b>Round any whole number to a required degree of accuracy</b></p> <p><b>Interpret and use negative numbers in context, and calculate intervals across zero</b> 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><b>Read, write, order and compare numbers up to 10,000,000 and determine the value of each digit.</b> Count forwards and backwards in steps of powers of 10 for any given number up to 10,000,000</p> <p><b>Solve multi step number problems and practical problems involving all of the above and utilising all four operations</b></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><b>Perform mental calculations, including with mixed operations and large numbers</b></p>	<p>Use informal and formal pencil and paper methods to support, record or explain additions and subtractions.</p> <p><b>Solve addition and subtraction multi-step problems in contexts, deciding on which operations and methods to use and why</b></p> <p><b>Use estimation to check answers to calculations and determine, in the context of a problem, an appropriate ° of accuracy.</b></p> <p><b>Use their knowledge of the order of operations to carry out calculations involving the four operations.</b></p> <p><b>Solve problems involving all four operations</b></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><b>Use their knowledge of the order of operations to carry out calculations involving the four operations.</b></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><b>Identify common factors, multiples and prime numbers</b></p> <p>Understand and apply tests of divisibility using known facts.</p>	<p><b>Perform mental calculations, including with mixed operations and large numbers</b></p> <p>Derive quickly:</p> <ul style="list-style-type: none"> <li>- doubles of two-digit numbers (e.g. <math>3.8 \times 2</math>, <math>0.76 \times 2</math>);</li> <li>- doubles of multiples of 10 to 1000 (e.g. <math>670 \times 2</math>); doubles of multiples of 100 to 10000 (e.g. <math>6500 \times 2</math>); and the corresponding halves.</li> <li>- division facts corresponding to tables up to <math>12 \times 12</math></li> <li>- squares of multiples of 10 to 100 (e.g. <math>60 \times 60</math>)</li> </ul> <p>Consolidate knowing by heart: multiplication facts up to <math>12 \times 12</math></p>	<p>Use formal and informal pencil and paper methods to support, record or explain multiplications and divisions.</p> <p><b>Multiply multi-digit numbers up to 4 digits by by a two-digit number using the formal method of long multiplication</b></p> <p><b>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.</b></p> <p><b>Divide numbers of up to 4 digit numbers by a two digit whole number using the formal written method of short division where appropriate</b></p> <p><b>Use estimation to check answers to calculations and determine, in the context of a problem, an appropriate ° of accuracy.</b></p> <p><b>Use their knowledge of the order of operations to carry out calculations involving the four operations.</b></p> <p><b>Solve problems involving all four operations</b></p> <p><b>Multiply one digit numbers with up to 2dp by whole numbers</b></p> <p>Extend written methods to: multiplication of numbers involving decimals, measures and money.</p>	<p><b>Use estimation to check answers to calculations and determine, in the context of a problem, an appropriate ° of accuracy.</b></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 <math>\frac{33}{8}</math> to the equivalent mixed number <math>4\frac{1}{8}</math> and vice versa.</p> <p>- Recognise relationships between fractions: for example, that <math>\frac{1}{10}</math> is ten times <math>\frac{1}{100}</math>, and <math>\frac{1}{16}</math> is half of <math>\frac{1}{8}</math>.</p> <p><b>-simplify fractions using common factors and use common multiples to express fractions in the same denomination</b></p> <p>-Compare and order fractions such as <math>\frac{2}{3}</math>, <math>\frac{3}{4}</math> and <math>\frac{5}{6}</math> by converting them to fractions with a common denominator, and position them on a number line.</p> <p><b>-identify the value of each digit represents in a number with up to 3dp and multiply and divide numbers by 10, 100 and 1000</b></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><b>-solve problems that require answers to be rounded to specific degrees of accuracy</b></p> <p><b>-solve problems involving the calculation of percentages (e.g. find 10% of £500, then 20%, 40% and 80% by doubling)</b></p> <p><b>-Compare and order fractions, decimals and percentages more and less than 1</b></p> <p><b>-Add, subtract, divide fraction by whole numbers and multiply fractions with different denominators, mixed numbers and whole numbers using the concept of equivalent fractions</b></p> <p><b>-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</b></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 <math>n</math> 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;"><b>Solving problems and making decisions</b></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;"><b>Algebra</b></p> <p><b>Use simple formulae</b></p> <p><b>Generate and describe number sequences, including those which are below zero, and include fractions, decimals and percentages</b></p> <p><b>Express missing number problems algebraically</b></p> <p><b>Find missing numbers to satisfy an equation with two unknowns</b></p> <p><b>Enumerate possibilities of combinations of two variables</b></p> <p style="text-align: center;"><b>Ratio</b></p> <p><b>Solve problems involving relative sizes of two quantities where missing values can be found by using integer multiplication and division facts</b></p> <p><b>Solve problems involving calculation of percentages and use percentages for comparison (how many percent bigger/smaller)</b></p> <p><b>Solve problems involving similar shapes where the scale factor is known or can be found</b></p> <p><b>Solve problems involving unequal sharing and grouping using knowledge of fractions and multiples</b></p>

## Year 6

Statistics	Measurement - mass, length, capacity and time	Measurement - area, perimeter and volume	Geometry - properties of shapes and position and direction
<p><b>Calculate and interpret the mean (average) of a set of data.</b></p> <p><b>Interpret and construct pie charts and line graphs and use these to solve problems</b></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><b>Solve problems involving the calculation and conversion of units of measure, using decimal notation up to three decimal places where appropriate</b></p> <p><b>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.</b></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><b>Convert between miles and kilometres and solve problems involving both units of measure</b></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><b>Recognise when it is possible to use a formula for area, perimeter and volume of shapes</b></p> <p><b>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</b></p> <p><b>Calculate the area of parallelograms and triangles</b></p> <p><b>Recognise that shapes with the same areas can have different perimeters and vice versa</b></p>	<ul style="list-style-type: none"> <li>- <b>Draw 2-D shapes using given dimensions and angles</b></li> <li>- Recognise and estimate angles.</li> <li>- Use a protractor to measure and draw acute and obtuse angles to the nearest degree.</li> <li>- <b>Recognise, describe and build simple 3-D shapes, including making nets.</b></li> <li>- Recognise where a shape will be after a rotation through 90° about one of its vertices.</li> <li>- <b>Compare and classify geometric shapes based on their properties and find unknown angles in any triangles, quadrilaterals and regular polygons using known facts</b></li> <li>- <b>Illustrate and name parts of circles, including radius, diameter and circumference and know that diameter is radius x 2</b></li> <li>- <b>Recognise and calculate angles where they meet at a point, are on a straight line, or are vertically opposite and find missing angles</b></li> </ul> <p style="text-align: center;"><b>Position and direction</b></p> <ul style="list-style-type: none"> <li>- <b>Describe positions in all four quadrants</b></li> <li>- <b>Draw and translate simple shapes on the coordinate plane, and reflect them in the axes</b></li> </ul>

