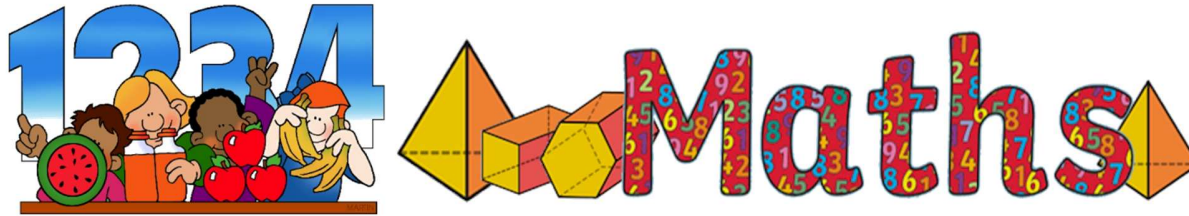


## Skills & Knowledge Progression:



Mathematics is a creative and highly inter-connected discipline that has been developed over centuries, providing the solution to some of history's most intriguing problems. It is essential to everyday life, critical to science, technology and engineering, and necessary for financial literacy and most forms of employment. A high-quality mathematics education therefore provides a foundation for understanding the world, the ability to reason mathematically, an appreciation of the beauty and power of mathematics, and a sense of enjoyment and curiosity about the subject.

– The National Curriculum, 2013



# Embedding our Intent: Maths

At Hawkhurst CEP School, we are committed to supporting our pupils to become confident and fluent mathematicians, able to build a deep conceptual understanding of the subject and make rich connections across mathematical ideas and with other subjects. We understand that a secure understanding of mathematics not only supports pupils to make progress academically but is a key skill in both our everyday and professional lives as adults. Consequently, a high-quality mathematics education is fundamental to preparing children for their future lives and careers. We also want our pupils to enjoy mathematics and see the creativity of the subject and develop a real curiosity about number, shape and measure.

At Hawkhurst CEP School we follow the White Rose scheme of learning and our skills progression and calculation policy are based on these small steps to develop mastery of each strand of mathematics in the National Curriculum. Teachers also draw on a wide range of resources and their own expertise to plan and deliver daily mathematics lessons. In addition to the main mathematics lesson, children in Key Stage 2 also do daily arithmetic activities to ensure that arithmetic and calculation skills are regularly revisited to develop fluency. To ensure that skills are secure, these arithmetic sessions will often follow the format of revisiting learning from 'yesterday, last week, last term, last year'.

From the EYFS to Year 6, children are taught to think deeply about mathematics and acquire thorough conceptual understanding. Fluency, reasoning and problem-solving skills will usually be developed in every mathematics lesson and children will be confident in applying the mathematical knowledge that they have learnt to a range of contexts. The ways in which children are taught to use and work with number, including some of the concrete and pictorial methods used to develop understanding, can be found in our calculation policy. This, and the mathematics skills progression document, detail how knowledge and skills are introduced and developed across the seven years of primary school to provide children with a secure foundation in mathematics learning and prepare them well for secondary education.

Each term, classes will make links between what they are learning in mathematics and the school value that the whole school is focussing on. Through this, children will develop a sense of the role that our school values play in both our curriculum and the whole school community, including our special place in the community of St Laurence Church.

We are committed to ensuring all children in our school have equal opportunities to access learning and lessons are planned and taught in line with our SEN and inclusion policies.

## Early Years Foundation Stage

The EYFS framework is structured very differently to the national curriculum as it is organised across seven areas of learning rather than subject areas. The aim of this document is to help subject leaders to understand how the skills taught across EYFS feed into national curriculum subjects.

This document demonstrates which statements from the 2020 Development Matters are prerequisite skills for mathematics within the national curriculum. The table below outlines the most relevant statements taken from the Early Learning Goals in the EYFS statutory framework and the Development Matters age ranges for Three and Four-Year-Olds and Reception to match the programme of study for mathematics.

The most relevant statements for mathematics are taken from the following areas of learning:

- Communication and Language
- Mathematics

Mathematical Vocabulary		
Three and Four-Year-Olds	Communication and Language	<ul style="list-style-type: none"><li>• Use a wider range of vocabulary.</li><li>• Understand 'why' questions, like: "why do you think the caterpillar is so fat?"</li></ul>
Reception	Communication and Language	<ul style="list-style-type: none"><li>• Learn new vocabulary.</li><li>• Use new vocabulary throughout the day.</li></ul>
ELG	Communication and Language	Speaking <ul style="list-style-type: none"><li>• Participate in small group, class and one-to-one discussions, offering their own ideas, using recently introduced vocabulary.</li></ul>

### Number and Place Value

#### Counting

Three and Four-Year-Olds	Mathematics		<ul style="list-style-type: none"> <li>• Recite numbers past 5.</li> <li>• Say one number name for each item in order: 1, 2, 3, 4, 5.</li> <li>• Know that the last number reached when counting a small set of objects tells you how many there are in total ('cardinal principle').</li> </ul>
Reception	Mathematics		<ul style="list-style-type: none"> <li>• Count objects, actions and sounds.</li> <li>• Count beyond ten.</li> </ul>
ELG	Mathematics	Numerical Patterns	<ul style="list-style-type: none"> <li>• Verbally count beyond 20, recognising the pattern of the counting system.</li> </ul>

### Identifying, Representing and Estimating Numbers

Three and Four-Year-Olds	Mathematics		<ul style="list-style-type: none"> <li>• Fast recognition of up to 3 objects, without having to count them individually ('subitising').</li> <li>• Show 'finger numbers' up to 5.</li> <li>• Link numerals and amounts: for example, showing the right number of objects to match the numeral, up to 5.</li> <li>• Experiment with their own symbols and marks as well as numerals.</li> </ul>
Reception	Mathematics		<ul style="list-style-type: none"> <li>• Subitise.</li> <li>• Link the number symbol (numeral) with its cardinal number value.</li> </ul>
ELG	Mathematics	Number	<ul style="list-style-type: none"> <li>• Subitise (recognising quantities without counting) up to 5.</li> </ul>

### Reading and Writing Numbers

Three and Four-Year-Olds	Mathematics		<ul style="list-style-type: none"> <li>• Link numerals and amounts: for example, showing the right number of objects to match the numeral, up to 5.</li> <li>• Experiment with their own symbols and marks as well as numerals.</li> </ul>
Reception	Mathematics		<ul style="list-style-type: none"> <li>• Link the number symbol (numeral) with its cardinal number value.</li> </ul>

<b>Compare and Order Numbers</b>		
Three and Four-Year-Olds	Mathematics	<ul style="list-style-type: none"> <li>Compare quantities using language: 'more than', 'fewer than'.</li> </ul>
Reception	Mathematics	<ul style="list-style-type: none"> <li>Compare numbers.</li> </ul>
ELG	Mathematics	Numerical Patterns <ul style="list-style-type: none"> <li>Compare quantities up to 10 in different contexts, recognising when one quantity is greater than, less than or the same as the other quantity.</li> </ul>
<b>Understanding Place Value</b>		
Reception	Mathematics	<ul style="list-style-type: none"> <li>Understand the 'one more than/one less than' relationship between consecutive numbers.</li> <li>Explore the composition of numbers to 10.</li> </ul>
ELG	Mathematics	Number <ul style="list-style-type: none"> <li>Have a deep understanding of numbers to 10, including the composition of each number.</li> </ul>
<b>Solve Problems</b>		
Three and Four-Year-Olds	Mathematics	<ul style="list-style-type: none"> <li>Solve real world mathematical problems with numbers up to 5.</li> </ul>

<b>Addition and Subtraction</b>		
<b>Mental Calculations</b>		
Reception	Mathematics	<ul style="list-style-type: none"> <li>Automatically recall number bonds for numbers 0-10.</li> </ul>
ELG	Mathematics	Number <ul style="list-style-type: none"> <li>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.</li> </ul>

<b>Solve Problems</b>			
ELG	Mathematics	Numerical Patterns	<ul style="list-style-type: none"> <li>• Explore and represent patterns within numbers up to 10, including evens and odds, double facts and how quantities can be distributed evenly.</li> </ul>
Reception	Mathematics		<ul style="list-style-type: none"> <li>• Subitise.</li> <li>• Link the number symbol (numeral) with its cardinal number value.</li> </ul>

<b>Measurement</b>			
<b>Describe, Measure, Compare and Solve (All Strands)</b>			
Three and Four-Year-Olds	Mathematics		<ul style="list-style-type: none"> <li>• Make comparisons between objects relating to size, length, weight and capacity.</li> </ul>
Reception	Mathematics		<ul style="list-style-type: none"> <li>• Compare length, weight and capacity.</li> </ul>

<b>Telling the Time</b>			
Three and Four-Year-Olds	Mathematics		<ul style="list-style-type: none"> <li>• Begin to describe a sequence of events, real or fictional, using words, such as 'first', 'then...'</li> </ul>

<b>Properties of Shapes</b>			
<b>Recognise 2D and 3D Shapes and their Properties</b>			

Three and Four-Year-Olds	Mathematics	<ul style="list-style-type: none"> <li>• Talk about and explore 2D and 3D shapes (for example, circles, rectangles, triangles and cuboids) using informal and mathematical language: 'sides', 'corners', 'straight', 'flat', 'round'.</li> <li>• Select shapes appropriately: flat surfaces for a building, a triangular pattern for a roof, etc.</li> <li>• Combine shapes to make new ones – an arch, a bigger triangle, etc.</li> </ul>
Reception	Mathematics	<ul style="list-style-type: none"> <li>• Select, rotate and manipulate shapes in order to develop spatial reasoning skills.</li> </ul>
<b>Compare and Classify Shapes</b>		
Reception	Mathematics	<ul style="list-style-type: none"> <li>• Compose and decompose shapes so that children can recognise a shape can have other shapes within it, just as numbers can.</li> </ul>

<b>Position and Direction</b>		
<b>Position, Direction and Movement</b>		
Three and Four-Year-Olds	Mathematics	<ul style="list-style-type: none"> <li>• Understand position through words alone – for example, "The bag is under the table," – with no pointing.</li> <li>• Describe a familiar route.</li> <li>• Discuss routes and locations, using words like 'in front of' and 'behind'.</li> </ul>
Reception	Understanding the World	<ul style="list-style-type: none"> <li>• Draw information from a simple map.</li> </ul>
<b>Patterns</b>		
Three and Four-Year-Olds	Mathematics	<ul style="list-style-type: none"> <li>• Talk about and identify the patterns around them. For example, stripes on clothes, designs on rugs and wallpaper. Use informal language like 'pointy', 'spotty', 'blobs', etc.</li> <li>• Extend and create ABAB patterns – stick, leaf, stick, leaf.</li> <li>• Notice and correct an error in a repeating pattern.</li> </ul>
Reception	Mathematics	<ul style="list-style-type: none"> <li>• Continue, copy and create repeating patterns.</li> </ul>

<b>Statistics</b>		
<b>Record, Present and Interpret Data</b>		
Three and Four-Year-Olds	Mathematics	• Experiment with their own symbols and marks, as well as numerals.

Topic	Year 1 Children should be taught to:
PLACE VALUE	<ul style="list-style-type: none"> <li>• Count to and across 100, forwards, backwards, beginning with 0 or 1, or from any given number.</li> <li>• Count numbers to 100 in numerals; count in multiples of twos, fives and tens.</li> <li>• Identify and represent numbers using objects and pictorial representations.</li> <li>• Read and write numbers to 100 in numerals.</li> <li>• Read and write numbers from 1 – 20 in numerals and words</li> <li>• Given a number, identify one more or one less.</li> </ul>
ADDITION & SUBTRACTION	<ul style="list-style-type: none"> <li>• Read, write and interpret mathematical statements involving addition (+) and subtraction (-) and equals (=) signs.</li> <li>• Represent and use number bonds and related subtraction facts within 20.</li> <li>• Add and subtract one digit and two-digit numbers to 20, including zero.</li> <li>• Solve one and two step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems eg: <math>7 = [ ] - 9</math>.</li> </ul>
MULTIPLICATION & DIVISION	<ul style="list-style-type: none"> <li>• Solve one step problems using multiplication and division, by calculating the answer using concrete objects, pictorial representations and arrays with the support of the teacher.</li> </ul>



<b>FRACTIONS, DECIMALS &amp; PERCENTAGES</b>	<ul style="list-style-type: none"> <li>• Recognise, find and name a half as one of two equal parts of an object, shape or quantity.</li> <li>• Recognise, find and name a quarter as one of four equal parts of an object, shape or quantity.</li> </ul>
<b>MEASUREMENT USING MEASURES</b>	<ul style="list-style-type: none"> <li>• Compare, describe and solve practical problems for: <ul style="list-style-type: none"> <li>➤ Lengths and heights (long/short, longer/shorter, tall/short, double/half).</li> <li>➤ Mass and weight (heavy/light, heavier than/lighter than)</li> <li>➤ Capacity and volume (full/empty, more than/less than, half, half full, quarter)</li> <li>➤ Time (quicker, slower, earlier, later)</li> </ul> </li> <li>• Measure and begin to record the following: <ul style="list-style-type: none"> <li>➤ Lengths and heights</li> <li>➤ Mass and weight</li> <li>➤ Capacity and volume</li> <li>➤ Time (hours, minutes, seconds)</li> </ul> </li> </ul>
<b>MEASUREMENT: MONEY</b>	<ul style="list-style-type: none"> <li>• Recognise and know the value of different denominations of coins and notes.</li> </ul>
<b>MEASUREMENT: TIME</b>	<ul style="list-style-type: none"> <li>• Sequence events in chronological order using language (before/after, next, first, today, yesterday, tomorrow, morning, afternoon, evening)</li> <li>• Recognise and use language relating to dates including days of the week, weeks, months and years.</li> <li>• Tell the time to the hour and half past the hour and draw the hands on a clock face to show those times.</li> </ul>

<b>GEOMETRY: 2D SHAPES</b>	<ul style="list-style-type: none"><li>• Recognise and name common 2D shapes (rectangles, squares, circles and triangles).</li></ul>
<b>GEOMETRY: 3D SHAPES</b>	<ul style="list-style-type: none"><li>• Recognise and name common 3D shapes (cuboids, cubes, pyramids and spheres).</li></ul>
<b>GEOMETRY: POSITION &amp; DIRECTION</b>	<ul style="list-style-type: none"><li>• Describe position, direction and movements, including whole, half, quarter and three-quarter turns.</li></ul>

Topic	<p style="text-align: center;"><b>Year 2</b> <b>Children should be taught:</b></p>
<b>PLACE VALUE</b>	<ul style="list-style-type: none"> <li>• Count in steps of 2, 3, and 5 from 0 and in ten from any number, forward and backward.</li> <li>• Read and write numbers to at least 100 in numerals and in words.</li> <li>• Identify, represent and estimate numbers using different representations, including the number line.</li> <li>• Recognise the place value of each digit in a two-digit number (tens, ones)</li> <li>• Compare and order numbers from 0 up to 100, use <math>&lt;</math> <math>&gt;</math> <math>=</math> signs.</li> <li>• Use place value and number facts to solve problems.</li> </ul>
<b>ADDITION &amp; SUBTRACTION</b>	<ul style="list-style-type: none"> <li>• Recall and use addition and subtraction facts to 20 fluently and derive and use related facts up to 100.</li> <li>• Show that addition of two numbers can be done in any order (commutative) and subtraction of one number from another cannot.</li> <li>• Recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems.</li> <li>• Add and subtract numbers using concrete objects, pictorial representations and mentally, including: <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> </li> <li>• Solve problems with addition and subtraction: <ul style="list-style-type: none"> <li>➤ Using concrete objects and pictorial representations, including those involving numbers, quantities and measures.</li> <li>➤ Applying their increasing knowledge of mental and written methods.</li> </ul> </li> </ul>

<b>MULTIPLICATION &amp; DIVISION</b>	<ul style="list-style-type: none"> <li>• Recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers.</li> <li>• Show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot.</li> <li>• Calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication, division and equals signs.</li> <li>• Solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts.</li> </ul>
<b>FRACTIONS, DECIMALS &amp; PERCENTAGES</b>	<ul style="list-style-type: none"> <li>• Recognise, find, name and write fractions <math>\frac{1}{3}</math> <math>\frac{1}{4}</math> <math>\frac{2}{4}</math> and <math>\frac{3}{4}</math> of a length, shape, set of objects or quantity.</li> <li>• Recognise the equivalence of <math>\frac{2}{4}</math> and <math>\frac{1}{2}</math></li> <li>• Write simple fractions for example <math>\frac{1}{2}</math> of <math>6 = 3</math></li> </ul>
<b>MEASUREMENT USING MEASURES</b>	<ul style="list-style-type: none"> <li>• Choose and use appropriate standard units to estimate and measure length/height in any direction (m/cm); mass (kg/g); temperature (*C); capacity (litres/ml) to the nearest appropriate unit, using rulers, scales, thermometers and measuring vessels.</li> <li>• Compare and order lengths, mass, volume, capacity and record the results using <math>&lt;</math> <math>&gt;</math> and <math>=</math></li> </ul>
<b>MEASUREMENT: MONEY</b>	<ul style="list-style-type: none"> <li>• Recognise and use symbols for pounds (£) and pence (p); combine amounts to make a particular value.</li> <li>• Find different combinations of coins that equal the same amounts of money.</li> <li>• Solve simple problems in a practical context involving addition and subtraction of money of the same unit, including giving change.</li> </ul>

<b>MEASUREMENT: TIME</b>	<ul style="list-style-type: none"> <li>• Compare and sequence intervals of time.</li> <li>• Tell and write the time to five minutes, including quarter past / to the hour and draw hands on a clock face to show these times.</li> <li>• Know the number of minutes in an hour and the number of hours in a day.</li> </ul>
<b>GEOMETRY: 2D SHAPES</b>	<ul style="list-style-type: none"> <li>• Identify and describe the properties of 2D shapes, including the number of sides and line of symmetry in a vertical line.</li> <li>• Identify 2D shapes on the surface of 3D shapes (eg a circle on a cylinder and a triangle on a pyramid).</li> <li>• Compare and sort common 2D shapes and everyday objects.</li> </ul>
<b>GEOMETRY: 3D SHAPES</b>	<ul style="list-style-type: none"> <li>• Recognise and name common 3D shapes (cuboids, cubes, pyramids, spheres).</li> <li>• Compare and sort common 3D shapes and everyday objects.</li> </ul>
<b>GEOMETRY: POSITION &amp; DIRECTION</b>	<ul style="list-style-type: none"> <li>• Order and arrange combinations of mathematical objects in patterns and sequences.</li> <li>• Use mathematical vocabulary to describe position, direction and movement in a straight line and distinguishing between rotation as a turn in terms of right angles for quarter, half and three quarter turns (clockwise and anti-clockwise).</li> </ul>

## STATISTICS

- Interpret and construct simple pictograms, tally charts, block diagrams and simple tables.
- Ask and answer simple questions by counting the number of objects in each category and sorting the categories by quantity.
- Ask and answer questions about totalling and comparing categorical data.

Topic	<p style="text-align: center;"><b>Year 3</b> <b>Children should be taught:</b></p>
<b>PLACE VALUE</b>	<ul style="list-style-type: none"> <li>• Count from 0 in multiples of 4, 8, 50 and 100; find 10 or 100 more or less than a given number.</li> <li>• Identify, represent and estimate numbers using different representations.</li> <li>• Read and write numbers up to 1000 in numerals and in words.</li> <li>• Recognise the place value of each digit in a three-digit number (hundreds, tens, ones).</li> <li>• Compare and order numbers up to 1000.</li> <li>• Solve number problems and practical problems involving these ideas.</li> </ul>
<b>ADDITION &amp; SUBTRACTION</b>	<ul style="list-style-type: none"> <li>• Estimate the answer to a calculation and use inverse operations to check answers.</li> <li>• Add and subtract numbers mentally, including: <ul style="list-style-type: none"> <li>➤ A three-digit number and ones.</li> <li>➤ A three-digit number and tens.</li> <li>➤ A three-digit number and hundreds.</li> </ul> </li> <li>• Add and subtract numbers with up to three digits, using formal written methods of columnar addition and subtraction.</li> <li>• Solve problems including missing number problems, using number facts, place value, and more complex addition and subtraction.</li> </ul>
<b>MULTIPLICATION &amp; DIVISION</b>	<ul style="list-style-type: none"> <li>• Recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables.</li> <li>• Write and calculate mathematical statements for multiplication and division using the multiplication tables that they know, including for to digit numbers times one-digit numbers, using mental and progressing to formal written methods.</li> <li>• 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.</li> </ul>

<b>FRACTIONS, DECIMALS &amp; PERCENTAGES</b>	<ul style="list-style-type: none"> <li>• 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.</li> <li>• Recognise, find and write fractions of a discrete set of objects; unit fractions and non-unit fractions with small denominators,</li> <li>• Recognise and use fractions as numbers: unit fractions and non-unit fractions with small denominators.</li> <li>• Recognise and show, using diagrams, equivalent fractions with small denominators.</li> <li>• Compare and order unit fractions, and fractions with the same denominators.</li> <li>• Add and subtract fractions with the same denominator within one whole eg: <math>5/7 + 1/7 = 6/7</math></li> <li>• Solve problems that involve all of the above.</li> </ul>
<b>MEASUREMENT USING MEASURES</b>	<ul style="list-style-type: none"> <li>• Measure, compare, add and subtract: lengths (m/cm/mm); mass (kg/g); volume/capacity (L/ml)</li> </ul>
<b>MEASUREMENT: MONEY</b>	<ul style="list-style-type: none"> <li>• Add and subtract amounts of money to give change, using both £ and p in practical contexts.</li> </ul>
<b>MEASUREMENT: TIME</b>	<ul style="list-style-type: none"> <li>• Tell and write the time from an analogue clock, including using Roman numerals from I to XII, and 12 hour and 24 hour clocks.</li> <li>• 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, am/pm, morning, afternoon, noon and midnight.</li> <li>• Know the number of seconds in a minute and the number of days in each month, year and leap year.</li> <li>• Compare durations of events (eg calculate the time taken by particular events or tasks).</li> </ul>



<b>PERIMETER · AREA &amp; VOLUME</b>	<ul style="list-style-type: none"> <li>• Measure the perimeter of simple 2D shapes.</li> </ul>
<b>GEOMETRY : 2D SHAPES</b>	<ul style="list-style-type: none"> <li>• Draw 2D shapes.</li> </ul>
<b>GEOMETRY : 3D SHAPES</b>	<ul style="list-style-type: none"> <li>• Make 3D shapes using modelling materials; recognise 3D shapes in different orientations and describe them.</li> </ul>
<b>GEOMETRY: ANGLES &amp; LINES</b>	<ul style="list-style-type: none"> <li>• Recognise angles as a property of shape or a description of a turn.</li> <li>• 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.</li> <li>• Identify horizontal and vertical lines and pairs of perpendicular and parallel lines.</li> </ul>
<b>STATISTICS</b>	<ul style="list-style-type: none"> <li>• Interpret and present data using bar charts, pictograms and tables.</li> </ul>

Topic	<p style="text-align: center;"><b>Year 4</b> <b>Children should be taught:</b></p>
<b>PLACE VALUE</b>	<ul style="list-style-type: none"> <li>• Count in multiples of 6, 7, 9, 25 and 1000.</li> <li>• Count backwards through zero to include negative numbers.</li> <li>• Identify, represent and estimate numbers using different representations.</li> <li>• Read Roman numerals to 100 (I to C) and know that over time, the numeral system changed to include the concept of zero and place value.</li> <li>• Find 1000 more or less than a given number.</li> <li>• Recognise the place value of each digit in a four-digit number (thousands, hundreds, tens, ones).</li> <li>• Order and compare numbers beyond 1000.</li> <li>• Round any number to the nearest 10, 100, or 1000.</li> <li>• Solve number and practical problems that involve all of the above and with increasingly large positive numbers.</li> </ul>
<b>ADDITION &amp; SUBTRACTION</b>	<ul style="list-style-type: none"> <li>• Estimate and use inverse operations to check answers to a calculation.</li> <li>• Add and subtract numbers with up to 4 digits using the formal written methods of columnar addition and subtraction where appropriate.</li> <li>• Solve addition and subtraction two step problems in contexts, deciding which operations and methods to use and why.</li> </ul>
<b>MULTIPLICATION &amp; DIVISION</b>	<ul style="list-style-type: none"> <li>• Recall multiplication and division facts for multiplication tables up to 12 x 12.</li> <li>• Use place value known and derived facts to multiply and divide mentally, including: multiplying by 0 and 1; dividing by 1; multiplying together 3 numbers.</li> <li>• Recognise and use factor pairs and commutativity in mental calculations.</li> <li>• Multiply two digit and three-digit numbers by a one-digit number using formal written layout.</li> <li>• Solve problems involving multiplying and adding, including using the distributive law to multiply two-digit numbers by one digit, integer scaling problems and harder correspondence problems such as n objects are connected to m objects.</li> </ul>

<b>FRACTIONS, DECIMALS &amp; PERCENTAGES</b>	<ul style="list-style-type: none"> <li>• Count up and down in hundredths; recognise that hundredths arise when dividing an object by one hundred and dividing tenths by ten.</li> <li>• Recognise and show, using diagrams, families of common equivalent fractions.</li> <li>• Add and subtract fractions with the same denominator.</li> <li>• Solve problems involving increasingly harder fractions to calculate quantities, and fractions to divide quantities, including non-unit fractions where the answer is a whole number.</li> <li>• Recognise and write decimal equivalents of any number of tenths or hundredths.</li> <li>• Recognise and write decimal equivalents to <math>\frac{1}{4}</math> <math>\frac{1}{2}</math> <math>\frac{3}{4}</math></li> <li>• Round decimals with one decimal place to the nearest whole number.</li> <li>• Compare numbers with the same number of decimal places up to two decimal places.</li> <li>• Find the effect of dividing a one, or two-digit number by 1 and 100, identifying the value of the digits in the answer as ones, tenths and hundredths.</li> <li>• Solve simple measure and money problems involving fractions and decimals to two decimal places.</li> </ul>
<b>MEASUREMENT USING MEASURES</b>	<ul style="list-style-type: none"> <li>• Convert between different units of measure (km to m, hour to minute).</li> <li>• Estimate, compare and calculate different measures.</li> </ul>
<b>MEASUREMENT: MONEY</b>	<ul style="list-style-type: none"> <li>• Estimate, compare and calculate different measures, including money in pounds and pence.</li> </ul>

<b>MEASUREMENT: TIME</b>	<ul style="list-style-type: none"> <li>• Read, write and convert time between analogue and digital 12 and 24 hour clocks.</li> <li>• Solve problems involving converting from hours to minutes, minutes to seconds, years to months and weeks to days.</li> </ul>
<b>PERIMETER. AREA &amp; VOLUME</b>	<ul style="list-style-type: none"> <li>• Measure and calculate the perimeter of a rectilinear figure (including squares) in cm and m.</li> <li>• Find the area of rectilinear shapes by counting squares.</li> </ul>
<b>GEOMETRY: 2D SHAPES</b>	<ul style="list-style-type: none"> <li>• Compare and classify geometric shapes, including quadrilaterals and triangles, based on their properties and sizes.</li> <li>• Identify lines of symmetry in 2D shapes presented in different orientations.</li> </ul>
<b>GEOMETRY: ANGLES &amp; LINES</b>	<ul style="list-style-type: none"> <li>• Identify acute and obtuse angles and compare and order angles up to two right angles by size.</li> <li>• Identify lines of symmetry in 2D shapes presented in different orientations.</li> <li>• Complete a simple symmetric figure with respect to a specific line of symmetry.</li> </ul>

<b>GEOMETRY: POSITION &amp; DIRECTION</b>	<ul style="list-style-type: none"><li>• Describe positions on a 2D grid as co-ordinates in the first quadrant.</li><li>• Describe movements between positions as translations of a given unit to the left/right and up/down.</li><li>• Plot specified points and draw sides to complete a given polygon.</li></ul>
<b>STATISTICS</b>	<ul style="list-style-type: none"><li>• Interpret and present discrete and continuous data using appropriate graphical methods, including bar charts and time graphs.</li></ul>

Topic	<p style="text-align: center;"><b>Year 5</b> <b>Children should be taught:</b></p>
<b>PLACE VALUE</b>	<ul style="list-style-type: none"> <li>• Count forwards or backwards in steps of powers of 10 for any given number up to 1,000,000.</li> <li>• Count forwards and backwards with positive and negative whole numbers, including through zero.</li> <li>• Read, write (order and compare) numbers to at least 1,000,000 and determine the value of each digit.</li> <li>• Read Roman numerals to 1000 (M) and recognise years written in Roman numerals.</li> <li>• Read, write, order and compare numbers to at least 1,000,000 and determine the value of each digit.</li> <li>• Interpret negative numbers in context.</li> <li>• Round any number up to 1,000,000 to the nearest 10, 100, 1000, 10,000 and 100,000.</li> <li>• Solve number problems and practical problems that involve all of the above.</li> </ul>
<b>ADDITION &amp; SUBTRACTION</b>	<ul style="list-style-type: none"> <li>• Use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy.</li> <li>• Add and subtract whole numbers with more than four digits, including using formal written methods (columnar addition and subtraction).</li> <li>• Add and subtract numbers mentally with increasingly large numbers.</li> <li>• Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why.</li> <li>• Solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign.</li> </ul>

## MULTIPLICATION & DIVISION

- Identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers.
- Know and use the vocabulary of prime numbers, prime factors and composite (non-prime) numbers.
- Establish whether a number up to 100 is prime and recall prime numbers up to 19.
- Recognise and use square numbers and cube numbers, and the notation for squared and cubed.
- Multiply numbers up to 4 digits by a one, or two-digit number using a formal written method, including long multiplication for two-digit numbers.
- Multiply and divide numbers mentally drawing upon known facts.
- Divide numbers up to 4 digits by a one-digit number using the formal written method of short division and interpret remainders appropriately for the context.
- Multiply and divide whole numbers and those involving decimals by 10, 100 and 1000.
- Solve problems involving multiplication and division including using their knowledge of factors and multiples, squares and cubes.
- Solve problems using multiplication and division, including scaling by simple fractions and problems involving simple rates.
- Solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign.

<b>FRACTIONS, DECIMALS &amp; PERCENTAGES</b>	<ul style="list-style-type: none"> <li>• Identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths.</li> <li>• Recognise mixed numbers and improper fractions and convert from one form to the other and write mathematical statements <math>&gt;1</math> as mixed number (eg: <math>2/5 + 4/5 = 6/5 = 11/5</math>)</li> <li>• Compare and order fractions whose denominators are all multiples of the same number.</li> <li>• Add and subtract fractions with the same denominator and denominators that are multiples of the same number.</li> <li>• Multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams.</li> <li>• Read and write decimal numbers as fractions eg <math>0.71 = 71/100</math></li> <li>• Recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents.</li> <li>• Round decimals with two decimal places to the nearest whole number and to one decimal place.</li> <li>• Read, write, order and compare numbers with up to three decimal places.</li> <li>• Solve problems involving numbers up to three decimal places.</li> <li>• Recognise the % symbol and understand that per cent relates to number of parts per hundred and write percentages as a fraction with a denominator 100 and as a decimal.</li> <li>• Solve problems which require knowing percentage and decimal equivalents of <math>\frac{1}{2}</math> <math>\frac{1}{4}</math> <math>1/5</math> <math>2/5</math> <math>4/5</math> and those fractions with a denominator of a multiple of 10 or 25.</li> </ul>
<b>MEASUREMENT USING MEASURES</b>	<ul style="list-style-type: none"> <li>• Convert between different units of metric measure (km/m, cm/m, cm/mm, g/kg, l/ml).</li> <li>• Understand and use approximate equivalences between metric units and common imperial units such as inches, pounds and pints.</li> <li>• Use all four operations to solve problems involving measure (length, mass, volume, money) using decimal notation, including scaling.</li> </ul>
<b>MEASUREMENT: MONEY</b>	<ul style="list-style-type: none"> <li>• Use all four operations to solve problems involving measure (money).</li> </ul>



<b>MEASUREMENT: TIME</b>	<ul style="list-style-type: none"> <li>• Solve problems involving converting between units of time.</li> </ul>
<b>PERIMETER. AREA &amp; VOLUME</b>	<ul style="list-style-type: none"> <li>• Measure and calculate the perimeter of composite rectilinear shapes in cm and m.</li> <li>• Calculate and compare the area of rectangles, including squares and including using standard units, square cm and square m and estimate the area of irregular shapes.</li> <li>• Estimate volume (eg using 1cm cubed blocks to build cuboids (including cubes) and capacity, for example using water.</li> </ul>
<b>GEOMETRY: 2D SHAPES</b>	<ul style="list-style-type: none"> <li>• Distinguish between regular and irregular polygons based on reasoning about equal sides and angles.</li> <li>• Use the properties of rectangles to deduce related facts and find missing lengths and angles.</li> </ul>
<b>GEOMETRY: 3D SHAPES</b>	<ul style="list-style-type: none"> <li>• Identify 3D shapes, including cubes and other cuboids, from 2D representations.</li> </ul>

<b>GEOMETRY: ANGLES &amp; LINES</b>	<ul style="list-style-type: none"> <li>• Know angles are measured in degrees: estimate and compare acute, obtuse and reflex angles.</li> <li>• Draw given angles, and measure them in degrees.</li> <li>• Identify: <ul style="list-style-type: none"> <li>➤ Angles at a point and one whole turn</li> <li>➤ Angles at a point and on a straight line and half a turn</li> <li>➤ Other multiples of 90 degrees.</li> </ul> </li> </ul>
<b>GEOMETRY: POSITION &amp; DIRECTION</b>	<ul style="list-style-type: none"> <li>• Identify, describe and represent the position of a shape following a reflection or translation, using the appropriate language, and know that the shape has not changed.</li> </ul>
<b>STATISTICS</b>	<ul style="list-style-type: none"> <li>• Complete, read and interpret information in tables, including timetables.</li> <li>• Solve comparison, sum and difference problems using information presented in a line graph.</li> </ul>

Topic	<p style="text-align: center;"><b>Year 6</b> <b>Children should be taught:</b></p>
<b>PLACE VALUE</b>	<ul style="list-style-type: none"> <li>• Read, write, order and compare numbers up to 10,000,000 and determine the value of each digit.</li> <li>• Round any whole number to a required degree of accuracy.</li> <li>• Use negative numbers in context, and calculate intervals across zero.</li> <li>• Solve number and practical problems that involve all of the above.</li> </ul>
<b>ADDITION &amp; SUBTRACTION</b>	<ul style="list-style-type: none"> <li>• Perform mental calculations, including with mixed operations and large numbers.</li> <li>• Use their knowledge of the order of operations to carry out calculations involving the four operations.</li> <li>• Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why.</li> </ul>
<b>MULTIPLICATION &amp; DIVISION</b>	<ul style="list-style-type: none"> <li>• Identify common factors, common multiples and prime numbers.</li> <li>• Use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy.</li> <li>• Multiply multi-digit numbers up to four digits by a two-digit whole number using the formal written method of long multiplication.</li> <li>• Divide numbers up to four digits by a two-digit whole number using the formal written method of long division, and interpret remainders as whole number remainders, fractions, or by rounding as appropriate for the context.</li> <li>• Divide numbers up to four digits by a two-digit number using the formal written method of short division where appropriate, interpreting remainders according to the context.</li> <li>• Perform mental calculations, including with mixed operations and large numbers.</li> <li>• Solve problems involving addition, subtraction, multiplication and division.</li> <li>• Use their knowledge of the order of operations to carry out calculations involving the four operations.</li> </ul>

<p style="writing-mode: vertical-rl; transform: rotate(180deg);"><b>FRACTIONS, DECIMALS &amp; PERCENTAGES</b></p>	<ul style="list-style-type: none"> <li>• Use common factors to simplify fractions; use common multiples to express fractions in the same denomination.</li> <li>• Compare and order fractions, including fractions <math>&gt;1</math></li> <li>• Add and subtract fractions with different denominations and mixed numbers, using the concept of equivalent fractions.</li> <li>• Multiply simple pairs of proper fractions, writing the answer in its simplest form eg <math>\frac{1}{4} \times \frac{1}{2} = \frac{1}{8}</math></li> <li>• Divide proper fractions by whole numbers.</li> <li>• Identify the value of each digit in numbers given to three decimal places.</li> <li>• Multiply and divide numbers by 10, 100, 1000 giving answers up to three decimal places.</li> <li>• Multiply one-digit numbers with up to two decimal places by whole numbers.</li> <li>• Use written division methods in cases where the answer has up to two decimal places.</li> <li>• Solve problems which require answers to be rounded to specified degrees of accuracy.</li> <li>• Associate a fraction with division and calculate decimal fraction equivalents.</li> <li>• Recall and use equivalences between simple fractions, decimals and percentages, including different contexts.</li> <li>• Solve problems involving the relative sizes of two quantities where missing values can be found by using integer multiplication and division facts.</li> <li>• Solve problems involving the calculation of percentages (for example of measures, as such as 15% of 360) and the use of percentages for comparison.</li> <li>• Solve problems involving similar shapes where the scale factor is known or can be found.</li> <li>• Solve problems involving unequal sharing and grouping using knowledge of fractions and multiples.</li> </ul>
<p style="writing-mode: vertical-rl; transform: rotate(180deg);"><b>ALGEBRA</b></p>	<ul style="list-style-type: none"> <li>• Use simple formulae.</li> <li>• Generate and describe linear number sequences.</li> <li>• Express missing number problems algebraically.</li> <li>• Find pairs of numbers that satisfy an equation with two unknowns.</li> <li>• Enumerate possibilities of combinations of two variables.</li> </ul>

<b>MEASUREMENT USING MEASURES</b>	<ul style="list-style-type: none"> <li>• Solve problems involving the calculation and conversion of units of measure, using decimal notation up to three decimal places where appropriate.</li> <li>• Use, read, write and convert between standard units, converting measurements of length, mass, volume and time from a smaller unit of measure to a larger unit, and vice versa, using decimal notation up to three decimal places.</li> </ul>
<b>MEASUREMENT: TIME</b>	<ul style="list-style-type: none"> <li>• Use, read, write and convert between standard units, converting measurements of time from a smaller unit of measure to a larger unit, and vice versa.</li> </ul>
<b>PERIMETER. AREA &amp; VOLUME</b>	<ul style="list-style-type: none"> <li>• Recognise that shapes with the same areas can have different perimeters and vice versa.</li> <li>• Recognise when it is possible to use formulae for area and volume of shapes.</li> <li>• Calculate the area of parallelograms and triangles.</li> <li>• Calculate, estimate and compare volume of cubes and cuboids using standard units, including cubic cm and extending to other units, m cubes, mm cubed, km cubed.</li> </ul>
<b>GEOMETRY: 2D SHAPES</b>	<ul style="list-style-type: none"> <li>• Draw 2D shapes using given dimensions and angles.</li> <li>• Compare and classify geometric shapes based on their properties and sizes.</li> <li>• Illustrate and name parts of circles, including radius, diameter and circumference and know that the diameter is twice the radius.</li> </ul>

<b>GEOMETRY: 3D SHAPES</b>	<ul style="list-style-type: none"><li>• Recognise, describe and build simple 3D shapes, including making nets.</li></ul>
<b>GEOMETRY: ANGLES &amp; LINES</b>	<ul style="list-style-type: none"><li>• Find unknown angles in any triangles, quadrilaterals and regular polygons.</li><li>• Recognise where angles meet at a point, are on a straight line, or are vertically opposite, and find missing angles.</li></ul>
<b>GEOMETRY: POSITION &amp; DIRECTION</b>	<ul style="list-style-type: none"><li>• Describe positions on the full co-ordinate grid (all four quadrants).</li><li>• Draw and translate simple shapes on the coordinate plane, and reflect them in the axes.</li></ul>
<b>STATISTICS</b>	<ul style="list-style-type: none"><li>• Interpret and construct pie charts and line graphs and use these to solve problems.</li><li>• Calculate and interpret the mean as an average.</li></ul>