



# The Weald Federation: Maths

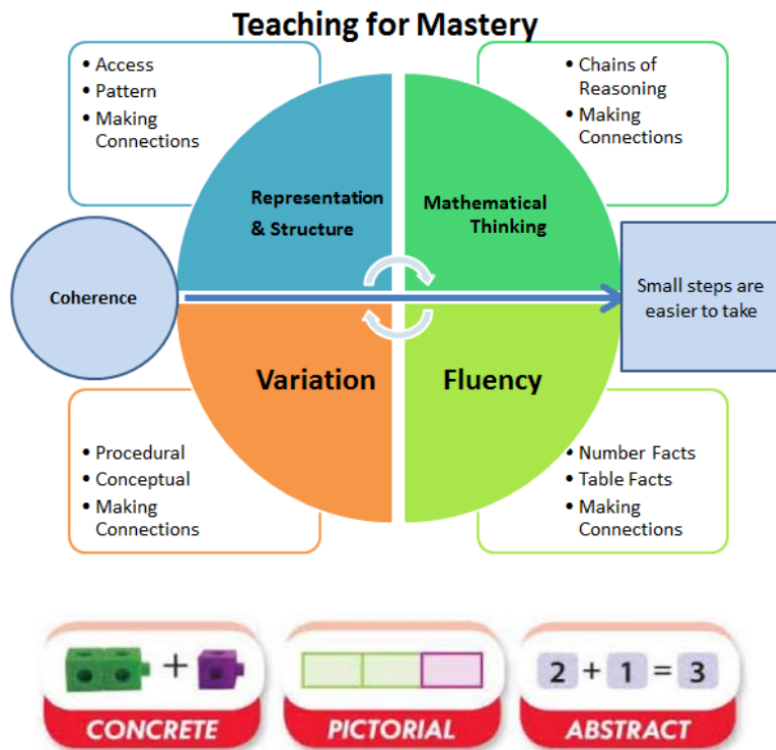
*With God's Love, we grow and learn together.*

## Intent

In The Weald Federation, our mathematics curriculum is designed to develop children who are confident, agile mathematicians. We aim to help our children to understand the role of maths in everyday life, how it can be life-enriching and enable them to make a positive contribution to society. Mathematics is an interconnected subject and we want our pupils to be able to move fluently between representations of mathematical ideas. Our curriculum is coherently planned and sequenced to ensure that all pupils develop sufficient skills and knowledge to reason and problem solve with increasing fluency and independence, ensuring that they are ready for the next stage of their learning. Our aim is that pupils become fluent in the fundamentals of mathematics, developing conceptual understanding and the ability to recall and apply knowledge rapidly and accurately; reason mathematically by following a line of enquiry, generalising and justifying ideas using mathematical language; and can solve problems by applying their mathematics to a variety of rich problems with increasing sophistication, including breaking down problems into a series of simpler steps and persevering in seeking solutions.

## Implementation

We teach the National Curriculum through a Maths Mastery approach. We primarily using the White Rose scheme of work. drawing upon materials from other leading resources to support and supplement learning as required. Lessons are taught daily for 50-60 minutes and follow the blocks of learning set out in the White Rose scheme, allowing for depth and breadth of learning within each strand of mathematics. In addition to the core lesson, we allocate 10 minutes per day to teach fluency in mental calculation. Central to our approach are **the 5 Big Ideas** which underpin mastery in mathematics.



- **Coherence:** Our lessons are broken down into small connected steps that gradually unfold the concept, providing access for all pupils and leading to a generalisation of the concept and the ability to apply this to a range of contexts.
- **Representation and structure:** Children engage with a wide and varied range of concrete manipulatives, pictorial representations and abstract methodologies within each session. Cohesive use of CPA is a fundamental part of mastery in mathematics for all learners, not just those pupils with SEND. Concrete and pictorial references scaffold and strengthen understanding and are widely used as a teaching and learning tool from Foundation Stage to Year 6 to support pupils with making connections.
- **Mathematical Thinking:** Sessions include explicit reference to key mathematical vocabulary and the use of stem sentences to support and encourage all children to communicate their ideas with mathematical precision and clarity. We expect and encourage children to use mathematical language to describe, discuss, examine, explain, justify and synthesize.
- **Variation:** Every learning session includes the opportunity to develop fluency skills, construct chains of reasoning using relevant knowledge alongside relevant terminology and solve increasingly complex problems in a systematic and coherent way.
- **Fluency:** We are committed to ensuring that pupils develop quick and efficient recall of facts and procedures and have the flexibility to move between different contexts and representations of mathematics. Pupils should be in secure their knowledge of Number facts to 20 by the end of Year 2 and all times tables and related divisional facts by the end of Year 4. As a federation we have adopted a fluency focus for all mathematics homework in order for children to have frequent opportunities to learn and use key number facts.

We understand the importance of early experiences of maths, and place a significant emphasis on developing a strong grounding in number – understanding that this is a necessary building block for children to excel in the subject. Our EYFS practitioners draw upon the Numberblocks resources provided by the NCETM along with the White Rose resources to provide creative and engaging opportunities for children to ignite their curiosity and enthusiasm for the subject. Activities and experiences are frequent and varied and allow children to build on and apply understanding of Numbers to 10. Concrete manipulatives are a key focus within sessions, as is the use of pictorial representations including Tens Frames and Part/Whole Models. Children are actively encouraged to use mathematical terminology within their understanding, with a focus on developing positive attitudes and interest in the subject. In EYFS, practitioners carry out ongoing formative assessment and make judgements against the Early Learning Goals with reference to ‘Development Matters’ to inform children’s next steps.

Teachers assess pupil attainment in Term 2, 4 and 6 on Insight Tracker. These judgements are subject to regular moderation and are discussed in Pupil Progress Meetings to highlight next steps. Pupils will also carry out the compulsory Multiplications Tables check in Year 4 and Standard Assessment Tests (SATs) in Year 6. In addition to formal, summative assessments, teachers will undertake regular formative assessments during each term to monitor progress and identify if support is needed at the earliest opportunity.

The Weald Federation has high ambitions for every pupil, whatever their background or circumstances. Where possible, using the mastery approach, all children will work on activities pitched towards their year group. However, teachers regularly monitor and assess pupils to identify if there are any children who require further challenge or support. Pupils that need further challenge will be encouraged to work more deeply within the learning objective, working on rich and complex problem solving tasks. Those who need further support will be quickly identified and provided with adaptive learning and/or intervention, offering provision to secure any gaps in understanding.

As with all aspects of learning, we regularly review, reflect upon and evaluate our Mathematics curriculum to ensure that it meets the needs of all the children in our school.

## **Impact**

The implementation of this curriculum ensures that when children leave our schools, they have the knowledge and skills in mathematics that they need to transition successfully to the next stage of their education, understand how maths is relevant to everyday life and have the foundations to make a positive contribution to society. Our pupils will be confident in their own abilities and proud of their achievements. When faced with mathematical problems and challenges, they will have the resilience and perseverance needed to find a solution in a systematic manner. Through their rich and varied learning experiences, our children will be fluent in the fundamentals of mathematics, will be able to recall and apply knowledge rapidly and will be able to confidently articulate their ideas and understanding using mathematical language.



# The Weald Federation: Maths Curriculum Map

	Term 1	Term 2	Term 3	Term 4	Term 5	Term 6
Year 1	<p><b>Number:</b> Place value; Addition and subtraction (within 10)</p> <p><b>Geometry:</b> Shape</p>		<p><b>Number:</b> Place Value (within 20); Addition and subtraction (within 20); Place Value (within 50)</p> <p><b>Measurement:</b> Length and height; Mass and volume</p>		<p><b>Number:</b> Multiplication &amp; division; Fractions; Place value (within 100)</p> <p><b>Geometry:</b> Position and direction</p> <p><b>Measurements:</b> Money; Time</p>	
Year 2	<p><b>Number:</b> Place value; Addition and subtraction</p> <p><b>Geometry:</b> Shape</p>		<p><b>Number:</b> Multiple and Division</p> <p><b>Measurement:</b> Money; Length and height; Mass, capacity and temperature</p>		<p><b>Number:</b> Fractions</p> <p><b>Measurement:</b> Time</p> <p><b>Statistics</b></p> <p><b>Geometry:</b> Position and direction</p>	
Year 3	<p><b>Number:</b> Place value Addition and subtraction,; Multiplication and division</p>		<p><b>Number:</b> Multiplication and division; Fractions</p> <p><b>Measurement:</b> Length and perimeter; Mass and capacity</p>		<p><b>Number:</b> Fractions</p> <p><b>Measurement:</b> Money; Time</p> <p><b>Geometry:</b> Shape</p> <p><b>Statistics</b></p>	
Year 4	<p><b>Number:</b> Place value; Addition and subtraction; Multiplication and division</p> <p><b>Measurement:</b> Area</p>		<p><b>Number:</b> Multiplication and division; Fractions; Decimals</p> <p><b>Measurement:</b> Length and perimeter</p>		<p><b>Number:</b> Decimals</p> <p><b>Measurement:</b> Money, Time</p>	
Year 5	<p><b>Number:</b> Place Value; Addition &amp; Subtraction; Multiplication &amp; Division; Fractions</p>		<p><b>Number:</b> Multiplication &amp; Division; Fractions; Decimals &amp; Percentages</p> <p><b>Measurement:</b> Perimeter &amp; Area</p> <p><b>Statistics</b></p>		<p><b>Geometry:</b> Shape; Position &amp; direction</p> <p><b>Number:</b> Decimals; Negative Numbers;</p> <p><b>Measurement:</b> Converting units; Volume</p>	
Year 6	<p><b>Number:</b> Place Value;</p> <p>Addition, Subtraction, Multiplication and Division, Fractions</p> <p><b>Measurement:</b> Converting units</p>		<p><b>Number:</b> Ratio; Algebra; Fractions, Decimals &amp; Percentages</p> <p><b>Measurement:</b> Area, Perimeter and Volume</p> <p><b>Statistics</b></p>		<p><b>Geometry:</b> Shape; Position &amp; direction</p>	



## Pre-Key Stage Standards - Maths

Pre-Key Stage Standard 1 (PK1)	Pre-Key Stage Standard 2 (PK2)	Pre-Key Stage Standard 3 (PK3)	Pre-Key Stage Standard 4 (PK4)
<p>The pupil can:</p> <ul style="list-style-type: none"><li>• demonstrate an understanding of the concept of transaction – for example, by exchanging a coin for an item, or one item for another, during a role-play activity</li><li>• distinguish between ‘one’ and ‘lots’, when shown an example of a single object and a group of objects</li><li>• demonstrate an understanding of the concept of 1:1 correspondence – for example, giving one cup to each pupil</li></ul>	<p>The pupil can:</p> <ul style="list-style-type: none"><li>• identify the big or small object from a selection of 2</li><li>• sort objects according to a stated characteristic – for example, group all the small balls together, sort the shapes into triangles and circles</li><li>• say the number names to 5 in the correct order – for example, in a song or by joining in with the teacher</li><li>• demonstrate an understanding of the concept of numbers up to 5 by putting together the right number of objects when asked</li><li>• copy and continue simple patterns using real-life materials – for example: apple, orange, apple, orange (and so on)</li></ul>	<p>The pupil can:</p> <ul style="list-style-type: none"><li>• identify how many objects there are in a group of up to 10 objects, recognising smaller groups on sight and counting the objects in larger groups up to 10</li><li>• demonstrate an understanding that the last number counted represents the total number of the count</li><li>• use real-life materials, such as apples or crayons, to add and subtract 1 from a group of objects and indicate how many are now present</li><li>• copy and continue more advanced patterns using real-life materials – for example: apple, apple, orange, apple, apple, orange (and so on)</li></ul>	<p>The pupil can:</p> <ul style="list-style-type: none"><li>• read and write numbers in numerals from 0 to 9</li><li>• demonstrate an understanding of the mathematical symbols of add, subtract and equal to</li><li>• solve number problems involving the addition and subtraction of single-digit numbers up to 10</li><li>• demonstrate an understanding of the composition of numbers to 5 and a developing ability to recall number bonds to and within 5 – for example, <math>2 + 2 = 4</math> and <math>3 + 1 = 4</math></li><li>• demonstrate an understanding of the commutative law – for example, <math>3 + 2 = 5</math>, therefore <math>2 + 3 = 5</math></li><li>• demonstrate an understanding of inverse relationships involving addition and subtraction – for example, if <math>3 + 2 = 5</math>, then <math>5 - 2 = 3</math></li><li>• demonstrate an understanding that the total number of objects changes when objects are added or taken away</li><li>• demonstrate an understanding that the number of objects remains the same when they are rearranged, providing nothing has been added or taken away</li><li>• count to 20, demonstrating that the next number in the count is one more and the previous number is one less</li><li>• recognise some common 2D shapes</li></ul>



# The Weald Federation: Maths – KS1 assessment points

YEAR 1	YEAR 2
<b>NUMBER – Place Value</b>	
<ul style="list-style-type: none"><li>Count to and across 100.</li><li>Count forwards and backwards, beginning with 0, 1 or any given number</li><li>Count, read and write numbers to 100 in numerals</li><li>Count in multiples of two</li><li>Count in multiples of five</li><li>Count in multiples of ten</li><li>Given a number, identify one more and one less</li><li>Identify and represent numbers using objects and pictorial representations including the number line</li><li>Use the language of equal to, more than, less than (fewer), most and least</li><li>Read and write numbers from 1 to 20 in numerals and words</li></ul>	<ul style="list-style-type: none"><li>Count in tens from any number, forward and backward</li><li>Count in steps of 2 from 0 forward and backward</li><li>Count in steps of 3 from 0 forward and backward</li><li>Count in steps of 5 from 0 forward and backward</li><li>Recognise the place value of each digit in a two-digit number (tens, ones)</li><li>Identify, represent and estimate numbers using different representations, including the number line</li><li>Compare and order numbers from 0 up to 100; use <math>&lt;</math>, <math>&gt;</math> and <math>=</math> signs</li><li>Read and write numbers to at least 100 in numerals and in words</li><li>Use place value and number facts to solve problems</li></ul>
<b>NUMBER – Addition &amp; Subtraction</b>	
<ul style="list-style-type: none"><li>Read, write and interpret mathematical statements involving addition (+), subtraction (–) and equals (=) signs</li><li>Represent and use number bonds and related subtraction facts within 20</li><li>Add one-digit and two-digit numbers to 20 including zero</li><li>Subtract one-digit and two-digit numbers to 20 including zero</li><li>Solve one-step problems that involve addition and subtraction using concrete objects and pictorial representations</li><li>Solve missing number problems</li></ul>	<ul style="list-style-type: none"><li>Solve problems with addition and subtraction: using concrete objects and pictorial representations, including those involving numbers, quantities and measures</li><li>Solve problems with addition and subtraction applying mental methods</li><li>Solve problems with addition and subtraction applying written methods</li><li>Recall and use addition and subtraction facts to 20 fluently</li><li>Derive and use related facts up to 100</li><li>Add numbers using concrete objects, pictorial representations and mentally: a two-digit and ones</li><li>Add numbers using concrete objects, pictorial representations and mentally: a two-digit and tens</li><li>Add numbers using concrete objects, pictorial representations and mentally: two two-digit numbers</li><li>Subtract numbers using concrete objects, pictorial representations and mentally: a two-digit and ones</li><li>Subtract numbers using concrete objects, pictorial representations and mentally: a two-digit and tens</li><li>Subtract numbers using concrete objects, pictorial representations and mentally: two two-digit numbers</li><li>Add numbers using concrete objects, pictorial representations, and mentally, including: adding three one-digit numbers</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></ul>
<b>NUMBER – Multiplication &amp; Division</b>	
<ul style="list-style-type: none"><li>Solve one-step problems involving multiplication by calculating the answer using concrete objectives, pictorial representations and arrays with the support of the teacher</li><li>Solve one-step problems involving division by calculating the answer using concrete objectives, pictorial representations and arrays with the support of the teacher</li></ul>	<ul style="list-style-type: none"><li>Recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables</li><li>Recognise odd and even numbers in the 2, 5 and 10 multiplication tables</li><li>Calculate mathematical statements for multiplication within the multiplication tables and write them using multiplication (x) and equals (=) signs</li><li>Calculate mathematical statements for division within the multiplication tables and write them using division (<math>\div</math>) and equals (=) signs</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>Solve problems involving multiplication using materials, arrays, repeated addition, mental methods and multiplication facts, including problems in contexts.</li><li>Solve problems involving division using materials, arrays, repeated addition, mental methods and division facts, including problems in contexts.</li></ul>

YEAR 1	YEAR 2
<b>NUMBER – Fractions</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>	<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>Write simple fractions for example <math>\frac{1}{2}</math> of 6 = 3</li> <li>Recognise equivalence of <math>\frac{2}{4}</math> and <math>\frac{1}{2}</math></li> </ul>
<b>MEASUREMENT</b>	
<ul style="list-style-type: none"> <li>Compare, describe and solve practical problems for: lengths and heights [for example, long/short, longer/shorter, tall/short, double/half]</li> <li>Compare, describe and solve practical problems for: mass/weight [for example, heavy/light, heavier than, lighter than]</li> <li>Compare, describe and solve practical problems for: capacity and volume [for example, full/empty, more than, less than, half, half full, quarter]</li> <li>Compare, describe and solve practical problems for: time [for example, quicker, slower, earlier, later]</li> <li>Measure and begin to record the following: lengths and heights</li> <li>Measure and begin to record the following: mass/weight</li> <li>Measure and begin to record the following: capacity and volume</li> <li>Measure and begin to record the following: time (hours, minutes, seconds)</li> <li>Recognise and know the value of different denominations of coins and notes</li> <li>Sequence events in chronological order using language [for example, before and after, next, first, today, yesterday, tomorrow, morning, afternoon and 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</li> <li>Draw the hands on a clock face to show the hour and half past the hour</li> </ul>	<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 (<math>^{\circ}</math>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 &gt;, &lt; and =</li> <li>Recognise and use symbols for pounds (£) and pence (p)</li> <li>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> <li>Compare and sequence intervals of time</li> <li>Tell and write the time to five minutes, including quarter past/to the hour</li> <li>Draw the hands on a clock face to show the time to five minutes, including quarter past/to the hour</li> <li>Know the number of minutes in an hour and the number of hours in a day</li> </ul>
<b>GEOMETRY – Properties of shapes</b>	
<ul style="list-style-type: none"> <li>Recognise and name common 2-D and 3-D shapes, including: 2-D shapes [for example, rectangles (including squares), circles and triangles]</li> <li>Recognise and name common 2-D and 3-D shapes, including: 3-D shapes [for example, cuboids (including cubes), pyramids and spheres]</li> </ul>	<ul style="list-style-type: none"> <li>Identify and describe the properties of 2-D shapes, including the number of sides and line symmetry in a vertical line</li> <li>Identify and describe the properties of 3-D shapes, including the number of edges, vertices and faces</li> <li>Identify 2-D shapes on the surface of 3-D shapes [for example, a circle on a cylinder and a triangle on a pyramid]</li> <li>Compare and sort common 2-D and 3-D shapes and everyday objects</li> </ul>
<b>GEOMETRY – Position &amp; Direction</b>	
<ul style="list-style-type: none"> <li>Describe position, direction and movement, including whole, half, quarter and three-quarter turns</li> </ul>	<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 including movement in a straight line</li> <li>Distinguish between rotation as a turn and in terms of right angles for quarter, half and three-quarter turns</li> <li>Distinguish between rotation as a turn and in terms of right angles for quarter, half and three-quarter turns</li> </ul>
<b>STATISTICS</b>	
	<ul style="list-style-type: none"> <li>Construct simple pictograms, tally charts, block diagrams and simple tables</li> <li>Interpret simple pictograms, tally charts, block diagrams and simple tables</li> <li>Ask and answer simple questions by counting the number of objects in each category and sorting the categories by quantity</li> <li>Ask and answer questions about totalling and comparing categorical data</li> </ul>



# The Weald Federation: Maths – Lower KS2 assessment points

YEAR 3	YEAR 4
<b>NUMBER – Place Value</b>	
<ul style="list-style-type: none"> <li>Count from 0 in multiples of 4, 8, 50 &amp; 100</li> <li>Find 10 or 100 more or less than a given number</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>Read and write numbers up to 1000 in numerals and in words</li> <li>Solve number problems and practical problems involving these ideas</li> </ul>	<ul style="list-style-type: none"> <li>Count in multiples of 6, 7, 9, 25 and 1000</li> <li>Find 1000 more or less than a given number</li> <li>Count backwards through zero to include negative numbers</li> <li>Recognise the place value of each digit in a four-digit number (thousands, hundreds, tens, and ones)</li> <li>Order and compare numbers beyond 1000</li> <li>Identify, represent and estimate numbers using different representations</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> <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> </ul>
<b>NUMBER – Addition &amp; Subtraction</b>	
<ul style="list-style-type: none"> <li>Add and subtract numbers mentally including adding ones, tens and hundreds to a 3-digit number</li> <li>Add numbers with up to 3 digits using the formal written methods of columnar addition where appropriate</li> <li>Subtract numbers with up to 3 digits using the formal written methods of columnar subtraction where appropriate</li> <li>Estimate the answer to a calculation and use inverse operations to check answers</li> <li>Solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction</li> </ul>	<ul style="list-style-type: none"> <li>Add numbers with up to 4 digits using the formal written methods of columnar addition where appropriate</li> <li>Subtract numbers with up to 4 digits using the formal written methods of columnar subtraction where appropriate</li> <li>Estimate and use inverse operations to check answers to a calculation</li> <li>Solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why</li> </ul>
<b>NUMBER – 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>Answer 2-digit x 1-digit multiplications (using the tables they know) - mental and informal 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>	<ul style="list-style-type: none"> <li>Recall multiplication and division facts for multiplication tables up to <math>12 \times 12</math></li> <li>Multiply and divide by 0 and 1</li> <li>Multiply together three numbers (mentally)</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, including using the distributive law to multiply two digit numbers by one digit, integer scaling problems and harder correspondence problems</li> </ul>
<b>NUMBER – Fractions</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>Add and subtract fractions with the same denominator within one whole [for example, <math>5/7 + 1/7 = 6/7</math>]</li> <li>Compare and order unit fractions, and fractions with the same denominators</li> <li>Solve problems that involve all of the above</li> </ul>	<ul style="list-style-type: none"> <li>Recognise and show, using diagrams, families of common equivalent fractions</li> <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>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>Add and subtract fractions with the same denominator</li> <li>Recognise and write decimal equivalents of any number of tenths or hundredths</li> <li>Recognise and write decimal equivalents to <math>1/4</math>, <math>1/2</math>, <math>3/4</math></li> <li>Find the effect of dividing a one- or two-digit number by 10 and 100, identifying the value of the digits in the answer as ones, tenths and hundredths</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>Solve simple measure and money problems involving fractions and decimals to two decimal places</li> </ul>

YEAR 3	YEAR 4
<b>MEASUREMENT</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> <li>• Measure the perimeter of simple 2-D shapes</li> <li>• Add and subtract amounts of money to give change, using both £ and p in practical contexts</li> <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</li> <li>• Record and compare time in terms of seconds, minutes and hours; use vocabulary such as o'clock, a.m./p.m., morning, afternoon, noon and midnight</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 [for example to calculate the time taken by particular events or tasks]</li> </ul>	<ul style="list-style-type: none"> <li>• Convert between different units of measure [for example, kilometre to metre; hour to minute]</li> <li>• Measure and calculate the perimeter of a rectilinear figure (including squares) in centimetres and metres</li> <li>• Find the area of rectilinear shapes by counting squares</li> <li>• Estimate, compare and calculate different measures, including money in pounds and pence</li> <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; weeks to days</li> </ul>
<b>GEOMETRY – Properties of shapes</b>	
<ul style="list-style-type: none"> <li>• Draw 2-D shapes and make 3-D shapes using modelling materials; recognise 3-D shapes in different orientations and describe them</li> <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>	<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 acute and obtuse angles</li> <li>• Compare and order angles up to two right angles by size</li> <li>• Identify lines of symmetry in 2-D 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 2-D grid as coordinates 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 data using bar charts, pictograms and tables</li> <li>• Solve one-step and two-step questions [for example, 'How many more?' and 'How many fewer?'] using information presented in scaled bar charts and pictograms and tables</li> </ul>	<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> <li>• Solve comparison, sum and difference problems using information presented in bar charts, pictograms, tables and other graphs</li> </ul>





# The Weald Federation: Maths – Upper KS2 assessment points

YEAR 5	YEAR 6
<b>NUMBER – Place Value</b>	
<ul style="list-style-type: none"><li>• Read and write numbers to at least 1,000,000</li><li>• Recognise the place value of each digit in numbers to 1,000,000</li><li>• Order and compare numbers to at least 1,000,000</li><li>• Count forwards or backwards in steps of powers of 10 for any given number up to 1 000 000</li><li>• Interpret negative numbers in context, count forwards and backwards with positive and negative whole numbers, including through zero</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><li>• Read Roman numerals to 1000 (M) and recognise years written in Roman numerals</li></ul>	<ul style="list-style-type: none"><li>• Read and write numbers to at least 10,000,000</li><li>• Identify the value of each digit in numbers to three decimal places</li><li>• Order and compare numbers up to 10,000,000</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>NUMBER – Addition, Subtraction, Multiplication &amp; Division</b>	
<ul style="list-style-type: none"><li>• Add whole numbers with more than 4 digits, including using formal written methods (columnar addition)</li><li>• Subtract whole numbers with more than 4 digits, including using formal written methods (columnar subtraction)</li><li>• Add and subtract numbers mentally with increasingly large numbers</li><li>• Use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy</li><li>• Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why</li><li>• Identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers</li><li>• Know and use the vocabulary of prime numbers, prime factors and composite (non-prime) numbers</li><li>• Establish whether a number up to 100 is prime and recall prime numbers up to 19</li><li>• 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</li><li>• Multiply and divide numbers mentally drawing upon known facts</li><li>• 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</li><li>• Multiply and divide whole numbers and those involving decimals by 10, 100 and 1000</li><li>• Recognise and use square numbers and cube numbers, and the notation for squared (2) and cubed (3)</li><li>• Solve problems involving multiplication and division including using their knowledge of factors and multiples, squares and cubes</li><li>• Solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign</li><li>• Solve problems involving multiplication and division, including scaling by simple fractions and problems involving simple rates</li></ul>	<ul style="list-style-type: none"><li>• Multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication</li><li>• Divide numbers up to 4 digits by a two-digit whole number using the formal written method of long division, and interpret remainders as whole number remainders, fractions, or by rounding, as appropriate for the context</li><li>• Divide numbers up to 4 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>• Identify common factors, common multiples and prime 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><li>• Solve problems involving addition, subtraction, multiplication and division</li><li>• Use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy</li></ul>

YEAR 5	YEAR 6
<b>NUMBER – Fractions (including decimals &amp; percentages)</b>	
<ul style="list-style-type: none"> <li>• Compare and order fractions whose denominators are all multiples of the same number</li> <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 a mixed number [for example, <math>2/5 + 4/5 = 6/5 = 1 \frac{1}{5}</math>]</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 [for example, <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 number up to three decimal places</li> <li>• Understand that per cent relates to ‘number of parts per hundred’, and write percentages as a fraction with denominator 100, and as a decimal</li> <li>• Solve problems which require knowing percentage and decimal equivalents of <math>1/2</math>, <math>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>	<ul style="list-style-type: none"> <li>• Recognise and show, using diagrams, families of common equivalent fractions</li> <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>• 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>• Add and subtract fractions with the same denominator</li> <li>• Recognise and write decimal equivalents of any number of tenths or hundredths</li> <li>• Recognise and write decimal equivalents to <math>1/4</math>, <math>1/2</math>, <math>3/4</math></li> <li>• Find the effect of dividing a one- or two-digit number by 10 and 100, identifying the value of the digits in the answer as ones, tenths and hundredths</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>• Solve simple measure and money problems involving fractions and decimals to two decimal places</li> </ul>
<b>MEASUREMENT</b>	
<ul style="list-style-type: none"> <li>• Convert between different units of metric measure (for example, kilometre and metre; centimetre and metre; centimetre and millimetre; gram and kilogram; litre and millilitre)</li> <li>• Understand and use approximate equivalences between metric units and common imperial units such as inches, pounds and pints</li> <li>• Measure and calculate the perimeter of composite rectilinear shapes in centimetres and metres</li> <li>• 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>)</li> <li>• Estimate the area of irregular shapes</li> <li>• Estimate volume [for example, using 1 cm<sup>3</sup> blocks to build cuboids (including cubes)] and capacity [for example, using water]</li> <li>• Solve problems involving converting between units of time</li> <li>• Use all four operations to solve problems involving measure [for example, length, mass, volume, money] using decimal notation, including scaling</li> </ul>	<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 to up to three decimal places</li> <li>• Convert between miles and kilometres</li> <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 centimetres (cm<sup>3</sup>) and cubic metres (m<sup>3</sup>), and extending to other units [for example, mm<sup>3</sup> and km<sup>3</sup>]</li> </ul>
<b>GEOMETRY – Properties of shapes</b>	
<ul style="list-style-type: none"> <li>• Identify 3-D shapes, including cubes and other cuboids, from 2-D representations</li> <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: angles at a point and one whole turn (total 360°)</li> <li>• Identify: angles at a point on a straight line and <math>1/2</math> a turn (total 180°)</li> <li>• Identify: other multiples of 90°</li> <li>• Use the properties of rectangles to deduce related facts and find missing lengths and angles</li> <li>• Distinguish between regular and irregular polygons based on reasoning about equal sides and angles</li> </ul>	<ul style="list-style-type: none"> <li>• Draw 2-D shapes using given dimensions and angles</li> <li>• Recognise, describe and build simple 3-D shapes, including making nets</li> <li>• Compare and classify geometric shapes based on their properties and sizes</li> <li>• Find unknown angles in any triangles, quadrilaterals, and regular polygons</li> <li>• Illustrate and name parts of circles, including radius, diameter and circumference and know that the diameter is twice the radius</li> <li>• Recognise angles where they meet at a point, are on a straight line, or are vertically opposite, and find missing angles</li> </ul>

YEAR 5	YEAR 6
<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>	<ul style="list-style-type: none"> <li>Describe positions on the full coordinate 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>Solve comparison, sum and difference problems using information presented in a line graph</li> <li>Complete, read and interpret information in tables, including timetables</li> </ul>	<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>
<b>RATIO &amp; PROPORTION</b>	
<ul style="list-style-type: none"> <li></li> </ul>	<ul style="list-style-type: none"> <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, and 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>
<b>ALGEBRA</b>	
<ul style="list-style-type: none"> <li></li> </ul>	<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>

# National Curriculum in England: Mathematics

## Purpose of Study

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.

## Aims

The national curriculum for mathematics aims to ensure that all pupils:

- become fluent in the fundamentals of mathematics, including through varied and frequent practice with increasingly complex problems over time, so that pupils develop conceptual understanding and the ability to recall and apply knowledge rapidly and accurately.
- reason mathematically by following a line of enquiry, conjecturing relationships and generalisations, and developing an argument, justification or proof using mathematical language
- can solve problems by applying their mathematics to a variety of routine and nonroutine problems with increasing sophistication, including breaking down problems into a series of simpler steps and persevering in seeking solutions.

Mathematics is an interconnected subject in which pupils need to be able to move fluently between representations of mathematical ideas. The programmes of study are, by necessity, organised into apparently distinct domains, but pupils should make rich connections across mathematical ideas to develop fluency, mathematical reasoning and competence in solving increasingly sophisticated problems. They should also apply their mathematical knowledge to science and other subjects. The expectation is that the majority of pupils will move through the programmes of study at broadly the same pace. However, decisions about when to progress should always be based on the security of pupils' understanding and their readiness to progress to the next stage. Pupils who grasp concepts rapidly should be challenged through being offered rich and sophisticated problems before any acceleration through new content. Those who are not sufficiently fluent with earlier material should consolidate their understanding, including through additional practice, before moving on.

## Attainment Targets

By the end of each key stage, pupils are expected to know, apply and understand the matters, skills and processes specified in the relevant programme of study.

# National Curriculum in England: Mathematics

Schools are not required by law to teach the example content in [square brackets] or the content indicated as being 'non-statutory'.

## Key Stage 1

### **Key Stage 1 – Year 1 and 2**

The principal focus of mathematics teaching in key stage 1 is to ensure that pupils develop confidence and mental fluency with whole numbers, counting and place value. This should involve working with numerals, words and the four operations, including with practical resources [for example, concrete objects and measuring tools]. At this stage, pupils should develop their ability to recognise, describe, draw, compare and sort different shapes and use the related vocabulary. Teaching should also involve using a range of measures to describe and compare different quantities such as length, mass, capacity/volume, time and money. By the end of year 2, pupils should know the number bonds to 20 and be precise in using and understanding place value. An emphasis on practice at this early stage will aid fluency. Pupils should read and spell mathematical vocabulary, at a level consistent with their increasing word reading and spelling knowledge at key stage 1.

## Key Stage 2

### **Lower KS2 (Year 3 and 4)**

The principal focus of mathematics teaching in lower key stage 2 is to ensure that pupils become increasingly fluent with whole numbers and the four operations, including number facts and the concept of place value. This should ensure that pupils develop efficient written and mental methods and perform calculations accurately with increasingly large whole numbers. At this stage, pupils should develop their ability to solve a range of problems, including with simple fractions and decimal place value. Teaching should also ensure that pupils draw with increasing accuracy and develop mathematical reasoning so they can analyse shapes and their properties, and confidently describe the relationships between them. It should ensure that they can use measuring instruments with accuracy and make connections between measure and number. By the end of year 4, pupils should have memorised their multiplication tables up to and including the 12 multiplication table and show precision and fluency in their work. Pupils should read and spell mathematical vocabulary correctly and confidently, using their growing word reading knowledge and their knowledge of spelling.

### **Upper KS2 (Year 5 and 6)**

The principal focus of mathematics teaching in upper key stage 2 is to ensure that pupils extend their understanding of the number system and place value to include larger integers. This should develop the connections that pupils make between multiplication and division with fractions, decimals, percentages and ratio. At this stage, pupils should develop their ability to solve a wider range of problems, including increasingly complex properties of numbers and arithmetic, and problems demanding efficient written and mental methods of calculation. With this foundation in arithmetic, pupils are introduced to the language of algebra as a means for solving a variety of problems. Teaching in geometry and measures should consolidate and extend knowledge developed in number. Teaching should also ensure that pupils classify shapes with increasingly complex geometric properties and that they learn the vocabulary they need to describe them. By the end of year 6, pupils should be fluent in written methods for all four operations, including long multiplication and division, and in working with fractions, decimals and percentages.

Pupils should read, spell and pronounce mathematical vocabulary correctly.