



# Woodhouse Academy

## Maths Curriculum Overview

### Year 5 Curriculum overview

Term	Main focus of teaching each term
<b>Autumn</b>	<p><b><i>Number – Place Value</i></b></p> <p>Read, write, order and compare numbers to at least 1000000 and determine the value of each digit.</p> <p>Count forwards or backwards in steps of powers of 10 for any given number up to 1000000.</p> <p>Interpret negative numbers in context, count forwards and backwards with positive and negative whole numbers including through zero.</p> <p>Round any number up to 1000000 to the nearest 10, 100, 1000, 10000 and 100000</p> <p>Solve number problems and practical problems that involve all of the above.</p> <p>Read Roman numerals to 1000 (M) and recognise years written in Roman numerals.</p> <p><b><i>Number- Addition and Subtraction</i></b></p> <p>Add and subtract numbers mentally with increasingly large numbers.</p> <p>Add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction) Use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy.</p> <p>Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why.</p> <p><b><i>Statistics</i></b></p> <p>Solve comparison, sum and difference problems using information presented in a line graph.</p> <p>Complete, read and interpret information in tables including timetables.</p> <p><b><i>Number – multiplication and division</i></b></p> <p>Multiply and divide numbers mentally drawing upon known facts.</p> <p>Multiply and divide whole numbers by 10, 100 and 1000.</p> <p>Identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers.</p> <p>Recognise and use square numbers and cube numbers and the notation for squared (2) and cubed (3)</p> <p>Solve problems involving multiplication and division including using their knowledge of factors and multiples, squares and cubes.</p> <p>Know and use the vocabulary of prime numbers, prime factors and composite (non-prime) numbers.</p> <p>Establish whether a number up to 100 is prime and recall prime numbers up to 19.</p> <p><b><i>Perimeter and Area</i></b></p> <p>Measure and calculate the perimeter of composite rectilinear shapes in cm and m.</p> <p>Calculate and compare the area of rectangles (including squares), and including using standard units, cm<sup>2</sup>, m<sup>2</sup> estimate the area</p>

## Spring

### ***Number – Multiplication and Division***

Multiply and divide numbers mentally drawing upon known facts.

Multiply numbers up to 4 digits by a one or two digit number using a formal written method, including long multiplication for 2 digit numbers.

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.

Solve problems involving addition and subtraction, multiplication and division and a combination of these, including understanding the use of the equals sign.

### ***Number: Fractions***

Compare and order fractions whose denominators are multiples of the same number. Identify, name and write equivalent fractions of a given fraction, represented visually including tenths and hundredths.

Recognise mixed numbers and improper fractions and convert from one form to the other and write mathematical statements  $>1$  as a mixed number [for example  $25 \div 45 = 65 = 1 \frac{15}{45}$ ]

Add and subtract fractions with the same denominator and denominators that are multiples of the same number.

Multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams.

Read and write decimal numbers as fractions [ for example  $0.71 = \frac{71}{100}$ ]

Solve problems involving multiplication and division, including scaling by simple fractions and problems involving simple rates.

### ***Number: Decimals and Percentages***

Read, write, order and compare numbers with up to three decimal places.

Recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents.

Round decimals with two decimal places to the nearest whole number and to one decimal place.

Solve problems involving number up to three decimal places.

Recognise the per cent symbol (%) and understand that per cent relates to 'number of parts per hundred', and write percentages as a fraction with denominator 100, and as a decimal.

Solve problems which require knowing percentage and decimal equivalents of 12, 14, 15, 25, 45 and those fractions with a denominator of a multiple of 10 or 25.

## Summer

### ***Number: Decimals***

Solve problems involving numbers up to three decimal places.

Multiply and divide whole numbers and those involving decimals by 10, 100 and 1000.

Use all four operations to solve problems involving measure (for example, length, mass, volume, money) using decimal notation, including scaling.

### ***Geometry- Properties of Shapes and Angles***

Identify 3D shapes, including cubes and other cuboids, from 2D representations.

Use the properties of rectangles to deduce related facts and find missing lengths and angles.

Distinguish between regular and irregular polygons based on reasoning about equal sides and angles.

Know angles are measured in degrees: estimate and compare acute, obtuse and reflex angles.

Draw given angles, and measure them in degrees (o)

Identify: angles at a point and one whole turn (total 360o), angles at a point on a straight line and  $\frac{1}{2}$  a turn (total 180o) other multiples of 90o

### ***Geometry- position and direction***

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.

### ***Measurement- converting units***

Convert between different units of metric measure [for example, km and m; cm and m; cm and mm; g and kg; l and ml]

Understand and use approximate equivalences between metric units and common imperial units such as inches, pounds and pints.

Solve problems involving converting between units of time.

### ***Measures Volume***

Estimate volume [for example using 1cm<sup>3</sup> blocks to build cuboids (including cubes)] and capacity [for example, using water]

Use all four operations to solve problems involving measure.

## Year 6 Curriculum Overview

Term	Main focus of teaching each term
<b>Autumn</b>	<p><b><i>Number: Place Value</i></b></p> <p>Read, write, order and compare numbers up to 10,000,000 and determine the value of each digit.            Round any whole number to a required degree of accuracy.            Use negative numbers in context, and calculate intervals across zero.            Solve number and practical problems that involve all of the above.</p> <p><b><i>Number- addition subtraction, multiplication + division</i></b></p> <p>Solve addition and subtraction multi step problems in contexts, deciding which operations and methods to use and why.            Multiply multi-digit number up to 4 digits by a 2-digit number using the formal written method of long multiplication.            Divide numbers up to 4 digits by a 2-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.            Divide numbers up to 4 digits by a 2-digit number using the formal written method of short division, interpreting remainders according to the context.            Perform mental calculations, including with mixed operations and large numbers.            Identify common factors, common multiples and prime numbers.            Use their knowledge of the order of operations to carry out calculations involving the four operations.            Solve problems involving addition, subtraction, multiplication and division.            Use estimation to check answers to calculations and determine in the context of a problem, an appropriate degree of accuracy.</p> <p><b><i>Fractions</i></b></p> <p>Use common factors to simplify fractions; use common multiples to express fractions in the same denomination.            Compare and order fractions, including fractions <math>&gt; 1</math>            Generate and describe linear number sequences (with fractions)            Add and subtract fractions with different denominations and mixed numbers, using the concept of equivalent fractions.            Multiply simple pairs of proper fractions, writing the answer in its simplest form [for example <math>14 \times 12 = 18</math> ]            Divide proper fractions by whole numbers [for example <math>13 \div 2 = 16</math> ]            Associate a fraction with division and calculate decimal fraction equivalents [ for example, 0.375] for a simple fraction [for example 38]            Recall and use equivalences between simple fractions, decimals and percentages, including in different contexts.</p> <p><b><i>Geometry- Position and Direction</i></b></p> <p>Describe positions on the full coordinate grid (all four quadrants).            Draw and translate simple shapes on the coordinate plane, and reflect them in the axes.</p>

Term	Main focus of teaching each term
Spring	<p><b>Number: Decimals</b></p> <p>Identify the value of each digit in numbers given to 3 decimal places and multiply numbers by 10, 100 and 1000 giving answers up to 3 decimal places.</p> <p>Multiply one-digit numbers with up to 2 decimal places by whole numbers.</p> <p>Use written division methods in cases where the answer has up to 2 decimal places.</p> <p>Solve problems which require answers to be rounded to specified degrees of accuracy</p> <p><b>Number: Percentages</b></p> <p>Solve problems involving the calculation of percentages [for example, of measures and such as 15% of 360] and the use of percentages for comparison.</p> <p>Recall and use equivalences between simple fractions, decimals and percentages including in different contexts.</p> <p><b>Number: Algebra</b></p> <p>Use simple formulae</p> <p>Generate and describe linear number sequences.</p> <p>Express missing number problems algebraically.</p> <p>Find pairs of numbers that satisfy an equation with two unknowns.</p> <p>Enumerate possibilities of combinations of two variables</p> <p><b>Measurement Converting Units</b></p> <p>Solve problems involving the calculation and conversion of units of measure, using decimal notation up to three decimal places where appropriate.</p> <p>Use, read, 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 3dp.</p> <p>Convert between miles and kilometres.</p> <p><b>Measurement: Perimeter, Area and Volume</b></p> <p>Recognise that shapes with the same areas can have different perimeters and vice versa.</p> <p>Recognise when it is possible to use formulae for area and volume of shapes.</p> <p>Calculate the area of parallelograms and triangles.</p> <p>Calculate, estimate and compare volume of cubes and cuboids using standard units, including cm<sup>3</sup>, m<sup>3</sup> and extending to other units (mm<sup>3</sup>, km<sup>3</sup>)</p> <p><b>Number: Ratio</b></p> <p>Solve problems involving the relative sizes of two quantities where missing values can be found by using integer multiplication and division facts.</p> <p>Solve problems involving similar shapes where the scale factor is known or can be found.</p> <p>Solve problems involving unequal sharing and grouping using knowledge of fractions and multiples.</p>

Term	Main focus of teaching each term
<b>Summer</b>	<p data-bbox="336 143 762 181"><b><i>Geometry: Properties of Shapes</i></b></p> <p data-bbox="336 188 1029 226">Draw 2-D shapes using giving dimensions and angles.</p> <p data-bbox="336 232 1433 315">Compare and classify geometric shapes based on their properties and sizes and find unknown angles in any triangles, quadrilaterals and regular polygons.</p> <p data-bbox="336 322 1433 405">Recognise angles where they meet at a point, are on a straight line, or are vertically opposite, and find missing angles.</p> <p data-bbox="336 456 448 495"><b><i>Statistics</i></b></p> <p data-bbox="336 501 1433 562">Illustrate and name parts of circles, including radius, diameter and circumference and know that the diameter is twice the radius.</p> <p data-bbox="336 568 1332 607">Interpret and construct pie charts and line graphs and use these to solve problems.</p> <p data-bbox="336 613 746 651">Calculate the mean as an average.</p> <p data-bbox="336 680 767 719"><b><i>Problem solving and Investigations</i></b></p>

## Year 7 Curriculum overview

Term	Main focus of teaching each term
<b>Autumn</b>	<p><b><i>Number: Place value</i></b>            Understand and use place value for decimals, measures and integers of any size.            Order positive and negative integers, use the number line as a model for ordering of the real numbers; use the symbols =, ≠, &lt;, &gt;, ≤, ≥            Round numbers and measures to an appropriate degree of accuracy [for example, to a number of decimal places or significant figures]</p> <p><b><i>Number- Addition &amp; subtraction</i></b>            Use formal written methods for addition and subtraction of integers and decimals.            Recognise and use relationships between addition and subtraction including inverse operations.            Calculate and solve problems involving perimeter.</p> <p><b><i>Number – Multiplication &amp; division</i></b>            Multiply and divide by 10, 100 and 1000            Use formal written methods for multiplication and division of integers and decimals.            Recognise and use relationships between operations including inverse operations.            Understand the order of operations.            Use the concepts and vocabulary of prime numbers, factors (or divisors), common factors and highest common factor (HCF).            Use integer powers and associated real roots (square, cube and higher), recognise powers of 2, 3, 4, 5 and distinguish between exact representations of roots and their decimal approximations.            Find the prime factor decomposition of a number.            Calculate and solve problems involving area of rectangles, triangles and parallelograms.            Calculate the mean average.            Use approximation through rounding to estimate answers and calculate possible resulting errors expressed using inequality notation <math>a &lt; x \leq b</math></p>

Term	Main focus of teaching each term
Spring	<p><b>Number: Fractions 1</b></p> <p>Represent fractions using diagrams and on a number line.</p> <p>Express one quantity as a fraction of another.</p> <p>Identify and use equivalent fractions.</p> <p>Compare and order fractions; use the symbols =, ≠, &lt;, &gt;, ≤, ≥</p> <p>Convert between mixed numbers and improper fractions.</p> <p>Simplify fractions.</p> <p>Converts between fractions and decimals</p> <ul style="list-style-type: none"> <li>☑ Tenths, hundredths, thousandths</li> <li>☑ Associating a fraction with division to convert any fraction to a decimal.</li> </ul> <p>Use the concepts and vocabulary of multiples and lowest common multiple (LCM).</p> <p>Add and subtract any fraction.</p> <ul style="list-style-type: none"> <li>☑ Fractions with the same denominator.</li> <li>☑ Fractions with a denominator that is a multiple of the other.</li> <li>☑ Fractions with different denominators</li> </ul> <p>Find a fraction of an amount</p> <p><b>Statistics 1</b></p> <p>Understand the data handling cycle.</p> <p>Understand the different types of data.</p> <p>Collect, organise and interpret data.</p> <ul style="list-style-type: none"> <li>☑ Tally charts</li> <li>☑ Two way tables</li> <li>☑ Median, mode and range</li> <li>☑ Consider outliers</li> </ul> <p>Draw and interpret bar charts, pictograms and line graphs.</p> <p><b>Number: Negative numbers</b></p> <p>Use the four operations with negative numbers.</p> <p>Understand the order of operations.</p>

Term	Main focus of teaching each term
Summer	<p><b>Algebra 1</b></p> <p>Introduction to algebra</p> <ul style="list-style-type: none"> <li>☑ Understand that a letter represents a variable.</li> <li>☑ Understand the difference between an expression, equation, formula, term, function and identity.</li> <li>☑ Form expressions from situations described in words.</li> </ul> <p>Pupils should be taught to: use and interpret algebraic notation, including:</p> <ul style="list-style-type: none"> <li>❖ <math>ab</math> in place of <math>a \times b</math></li> <li>❖ <math>3y</math> in place of <math>y + y + y</math> and <math>3 \times y</math></li> <li>❖ <math>a^2</math> in place of <math>a \times a</math>, <math>a^3</math> in place of <math>a \times a \times a</math>; <math>a^2b</math> in place of <math>a \times a \times b</math></li> <li>❖ in place of <math>b \div a</math></li> <li>❖ coefficients written as fractions rather than as decimals</li> <li>❖ brackets</li> </ul> <p>Substitute numerical values into formulae and expressions, including scientific formulae. (including examples with negatives)</p> <p>Simplify and manipulate algebraic expressions to maintain equivalence by:</p> <ul style="list-style-type: none"> <li>☑ collecting like terms.</li> </ul> <p>Use algebraic methods to solve simple linear equations in one variable where the unknown appears on one side of the equation.</p> <p>Generate terms of a sequence from either a term-to-term or a position-to-term rule.</p> <p>Recognise arithmetic sequences and find the <math>n</math>th term.</p> <p><b>Geometry – Lines &amp; angles</b></p> <p>Describe, sketch and draw using conventional terms and notations: points, lines, parallel lines, perpendicular lines, right angles, regular polygons, and other polygons that are reflectively and rotationally symmetric.</p> <p>Derive and illustrate properties of triangles, quadrilaterals, circles, and other plane figures [for example, equal lengths and angles] using appropriate language and technologies</p> <p>Use a protractor to measure and draw angles.</p> <p>Apply the properties of angles at a point, angles at a point on a straight line, vertically opposite angles.</p> <p>Understand and use alternate and corresponding angles on parallel lines.</p> <p>Derive and use the sum of angles in a triangle and a quadrilateral.</p> <p>Derive and use the sum of angles in a triangle and use it to deduce the angle sum in any polygon, and to derive properties of regular polygons.</p>

## Year 8 Curriculum overview

Term	Main focus of teaching each term
<b>Autumn</b>	<p><b><i>Four operations</i></b></p> <ul style="list-style-type: none"> <li>☐ Order of operations</li> <li>☐ Negative numbers</li> <li>☐ Fractions</li> <li>☐ Algebra</li> </ul> <p><b><i>Fractions</i></b></p> <p>Multiply and divide proper and improper fractions and mixed numbers both positive and negative.</p> <ul style="list-style-type: none"> <li>☐ Fraction x Integer</li> <li>☐ Fraction x Fraction</li> <li>☐ Fraction ÷ Integer</li> <li>☐ Integer ÷ Fraction</li> <li>☐ Fraction ÷ Fraction</li> <li>☐ All of the above proper, improper, mixed, positive and negative.</li> </ul> <p>Find a fraction of an amount.            Find the whole amount, given a fraction of the amount.            Find a fractional increase and decrease.</p> <p><b><i>Percentages</i></b></p> <p>Define percentage as ‘number of parts per hundred’, interpret percentages and percentage changes as a fraction or a decimal, interpret these multiplicatively, express one quantity as a percentage of another, compare two quantities using percentages, and work with percentages greater than 100%</p> <p>This should include:</p> <ul style="list-style-type: none"> <li>☐ Define percentage as ‘number of parts per hundred’</li> <li>☐ Interpret diagrams as percentages and vice versa</li> <li>☐ Interpret percentages as a fraction or as a decimal</li> <li>☐ Express one quantity as a percentage of another</li> <li>☐ Compare two quantities using percentages, and work with percentages greater than 100%</li> </ul> <p>e.g Claire got 16 out of 20 on a test, Simon got 21 out of 25 on a test. Who got the better score?</p> <ul style="list-style-type: none"> <li>☐ Interpret percentages as operators, with and without a calculator.</li> </ul> <p>Solve problems involving percentage change, including:</p> <ul style="list-style-type: none"> <li>☐ Percentage increase, decrease and original value problems and simple interest in financial mathematics.</li> </ul>

Term	Main focus of teaching each term
Spring	<p><b>Algebra 2</b></p> <p>Substitute numerical values into formulae and expressions, including scientific formulae.  ☑ Include all prior learning specifically fractions, decimals and negatives</p> <p>Simplify and manipulate algebraic expressions to maintain equivalence by:  ☑ multiplying a single term over a bracket  ☑ taking out common factors  ☑ expanding products of two or more binomials.  ☑ simplifying expressions involving sums, products and powers, including the laws of indices</p> <p>Use algebraic methods to solve linear equations in one variable (including all forms that require rearrangement)  ☑ Include equations with brackets  ☑ Include fractional equations</p> <p>Understand and use the concepts and vocabulary of inequalities.  ☑ Represent the solution set to an inequality on a number line and vice versa  ☑ Find the integer solutions of an inequality.  ☑ Solve linear inequalities in one variable.</p> <p>Rearrange formulae to change the subject, where the subject appears once.</p> <p><b>Geometry – Circles and area</b></p> <p>Convert between <math>\text{cm}^2</math> and <math>\text{m}^2</math>  Derive and apply formulae to calculate and solve problems involving area of circles, composite shapes and trapeziums.  Calculate and solve problems involving perimeters of 2-D shapes (including circles).  Include examples using algebra, fractions, decimals, etc.</p>

Term	Main focus of teaching each term
Summer	<p><b><i>Ratio, proportion &amp; rates of change</i></b></p> <p>Change freely between related standard units [for example time, length, area, volume/capacity, mass]</p> <p>Use ratio notation, including reduction to simplest form.</p> <p>Divide a given quantity into two or more parts.</p> <p>Given information about one part, find the whole or other part(s).</p> <p>Understand that a multiplicative relationship between two quantities can be expressed as a ratio or a fraction.</p> <p>Use compound units such as speed, unit pricing and density to solve problems.</p> <p>Solve problems involving direct and inverse proportion, including graphical and algebraic representations.</p> <p>Examples may include:</p> <ul style="list-style-type: none"> <li>☑Recipe problems</li> <li>☑Best buy problems</li> <li>☑Exchange rates</li> </ul> <p>Draw and interpret pie charts.</p> <p><b><i>Statistics</i></b></p> <p>Construct and analyse stem and leaf diagrams, including back to back.</p> <p>For non-grouped data given in the form of a table, find the mean, median, mode and range.</p> <p><b><i>Geometry – 3D shapes</i></b></p> <p>Use the properties of faces, surfaces, edges and vertices of cubes, cuboids, prisms, cylinders, pyramids, cones and spheres to solve problems in 3-D.</p> <p>Convert between <math>\text{cm}^3</math> and <math>\text{m}^3</math></p> <p>Know and use the fact that 1 litre = <math>1000\text{cm}^3</math></p> <p>Derive and apply formulae to calculate and solve problems involving volume and surface area of cuboids (including cubes) and other prisms (including cylinders).</p> <p>Construct and interpret plans and elevations of 3-D shapes.</p>