Halewood C of E Maths Progression

Our progression document shows the coverage of maths objectives across our school from Reception to Year 6. The objectives are taken from the national curriculum, early years foundation stage statutory framework and DFE ready-to-progress criteria. We follow **White Rose Maths** sequencing to deliver each objective to our children in small coherent steps.

Place value

Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Count objects, actions and sounds Compare two small groups of up to five objects Link numerals and amounts, showing the right numbers of objects to match the numeral, up to 5 Verbally count beyond 20 Say one number for each item in order 1, 2, 3, 4, 5	Count to and across 100, forwards and backwards, beginning with zero or 1, or from any given number Count, read and write numbers to 100 in numerals; count in multiples of 2s, 5s and 10s Identify and represent numbers using objects and pictorial representations including the number line, and use the language of: equal to, more than, less than (fewer), most, least Given a number, identify 1 more and 1 less within 100	Read and write numbers from 1 to 20 in numerals and words Read and write numbers to at least 100 in numerals and in words Identify, represent and estimate numbers using different representations, including the number line Count in steps of 2, 3 and 5 from 0, and in 10s from any number, forward and backward representations, including the number line	Identify, represent and estimate numbers to 1000 using different representations Recognise the place value of each digit in a 3-digit number (hundreds, tens, ones) Count from 0 in multiples of 4, 8, 50 and 100 Find 10 or 100 more or less than a given number Read and write numbers up to 1,000 in numerals and words	Identify, represent and estimate numbers up to 10,000 using different representations Read and write numbers up to 1,000 in numerals and words Count in multiples of 7, 7, 9, 25 and 1000 Recognise the place value of each digit in a 4-digit number (thousands, hundreds, tens and ones) Find 1,000 more or less than a given number Order and compare numbers beyond 1,000 Read Roman numerals to 100 (I to C) and know that over time, the numeral system	Read Roman numerals to 1,000 (M) and recognise years written in Roman numerals Read, write, order and compare numbers to at least 1,000,000 and determine the value of each digit Count forwards or backwards in steps of powers of 10 for any given number up to 1,000,000 Count forwards or backwards in steps of powers of 10 for any given number up to 1,000,000 Round any number up to 1,000,000 to the nearest 10, 100, 1,000, 10,000 and 100,000	Read, write, order and compare numbers up to 10,000,000 and determine the value of each digit Solve number and practical problems Round any whole number to a required degree of accuracy Use negative numbers in context, and calculate intervals across 0 Add and subtract from positive and negative numbers

Orders numerals 0-10 Subitise up to 5 Explore and represent patterns within numbers up to 10, including evens and odds, double facts and how quantities can be distributed equally.		Recognise the place value of each digit in a 2-digit number (tens, ones) Compare and order numbers from 0 up to 100; use <, > and = signs	Compare and order numbers to 1,000	changed to include the concept of zero and place value Round any number to the nearest 10, 100 or 1,000 Count forwards and backwards across 0	Solve number and practical problems Interpret negative numbers in context, count forwards and backwards with positive and negative whole numbers, including through zero	

Addition and subtraction

Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Automatically recall number bonds for numbers 0-5 Recall some number bonds to 10 Explore the composition of numbers to 10. Understand the 'one more than/one less than' relationship between consecutive numbers. Know doubling facts within 10	Read, write and interpret mathematical statements involving addition (+), subtraction (–) and equals (=) signs Recognise and use number bonds and related subtraction facts within 20 Add and subtract 1-digit and 2-digit numbers to 20, including zero Solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing	Recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100 Recognise and use number bonds and related subtraction facts within 20 Add and subtract numbers using concrete objects, pictorial representations, and mentally, including: a 2-digit number and 1s, a 2-digit number and 10s, two 2-digit numbers and adding three 1-digit numbers	Add and subtract numbers mentally, including: • a 3-digit number and ones • a 3-digit number and tens • a 3-digit number and hundreds Add and subtract numbers with up to 3 digits, using formal written methods of columnar addition and subtraction Solve problems, including missing number problems, using number facts, place value and more complex addition and subtraction Estimate the answer to a calculation and use inverse operations to check answers	Add and subtract numbers with up to 4 digits using the formal written methods of columnar addition and subtraction where appropriate Solve addition and subtraction two step problems in contexts, deciding which operations to use and why Estimate and use inverse operations to check answers to a calculation	Add and subtract numbers mentally with increasingly large numbers Add and subtract whole numbers with more than four digits, including using formal written methods (columnar addition and subtraction) Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why	Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why Solve problems involving addition and subtraction Use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy Perform mental calculations, including with mixed operations and large numbers Use estimation to check answers

	number problems such as 7 = ? – 9					

Multiplication and division

Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Halve sets of items and even numbers by sharing into 2 equal groups Represent quantities being distributed equally	Count in multiples of 2s, 5s and 10s Solve one-step problems involving multiplication and division by calculating the answer using concrete objects, pictorial representations and arrays with the support of the teacher	Calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication (×), division (÷) and equals (=) signs Show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot Recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers	Write and calculate mathematical statements for multiplication and division using the multiplication tables that they know, including for 2-digit numbers times 1-digit numbers, using mental and progressing to formal written methods Recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables 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	Recall multiplication and division facts for multiplication tables up to 12 × 12 Recognise and use factor pairs and commutativity in mental calculations Count in multiples of 6, 7, 9, 25 and 1,000 Use place value, known and derived facts to multiply and divide mentally, including: multiplying by 0 and 1; dividing by 1; multiplying together three numbers Multiply and divide whole numbers and those involving decimals by 10, 100 and 1,00 Solve problems involving multiplying and adding, including using the distributive law to multiply 2-digit numbers by 1 digit, integer scaling	Identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers Solve problems involving multiplication and division, including using their knowledge of factors and multiples, squares and cubes 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 (2) and cubed (3) Solve problems involving multiplication and division, including using their knowledge of	Identify common factors, common multiples and prime numbers Solve problems involving multiplication and division Multiply multi-digit numbers up to four digits by a 2-digt whole numbers using the formal written method of long multiplication Perform mental calculations, including with mixed operations and large numbers Divide numbers up to four digits by a 2-digit number using the formal written method of short division where appropriate, interpreting remainders according to the context

				problems and harder correspondence problems such as *n* objects are connected to *m* objects Multiply 2-digit and 3-digit numbers by a 1-digit number using formal written layout	factors and multiples, squares and cubes Multiply and divide whole numbers and those involving decimals by 10, 100 and 1,000 Multiply and divide numbers mentally, drawing upon known fact Multiply numbers up to four digits by a 1- or 2-digit number using a formal written method, including long multiplication for 2-digit numbers Divide up to four digits by a 1-digit number using the formal written method of short division and interpret remainders appropriately for the context Solve problems involving multiplication and division, including using their knowledge of factors and multiples, squares and cubes	Use their knowledge of the order of operations to carry out calculations involving the four operations Use estimation to check answers to calculations

Fractions

Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Halve sets of items and even numbers by sharing into 2 equal groups	Recognise, find and name a half as one of two equal parts of an object, shape or quantity Recognise, find and name a quarter as one of four equal parts of an object, shape or quantity	Recognise, find, name and write fractions shape, set of objects or quantity 1/3, ¼, 2/4 and ¾ of a length, shape, set of objects or quantity. Write simple fractions: For example: ½ of 6 = 3 Recognise the equivalence of 2/4 and ½	Recognise, find and write fractions of a discrete set of objects: unit fractions and non-unit fractions with small denominators Compare and order unit fractions, and fractions with the same denominators Recognise and use fractions as numbers: unit fractions and non-unit fractions with small denominators Measure, compare, add and subtract: lengths (m/cm/mm); mass (kg/g); volume/capacity (l/ml) Recognise and show, using diagrams, equivalent fractions with small denominators Add and subtract fractions with the	Counting beyond 1 in fractions Understanding how mixed numbers are represented on a number line Compare and order mixed numbers Understand improper fractions Convert mixed numbers to improper fractions Convert improper fractions to mixed numbers Recognise and show, using diagrams, families of common equivalent fractions Add and subtract fractions with the same denominator	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 Compare and order fractions whose denominators are all multiples of the same number Identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths Add and subtract fractions with the same denominator, and denominators that are multiples of the same number	Use common factors to simplify fractions; use common multiples to express fractions in the same denomination Compare and order fractions, including fractions > 1 Add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions Identify common factors, common multiples and prime numbers Use common factors to simplify fractions; use common multiples to express fractions in the same denomination Multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams

			same denominator within one whole		Multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams 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	Multiply simple pairs of proper fractions, writing the answer in its simplest form Divide proper fractions by whole numbers Associate a fraction with division and calculate decimal fraction equivalents

Decimals

Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
				Count up and down in tenths; recognise that tenths arise from dividing an object into 10 equal parts and in dividing 1-digit numbers or quantities by 10 Recognise and write decimal equivalents of any number of tenths or hundredths Compare numbers with the same number of decimal places up to 2 decimal places Find the effect of dividing a 1- or 2-digit number by 10 and 100, identifying the value of the digits in the answer as ones, tenths and hundredths Recognise and show, using diagrams, families of common equivalent fractions Count up and down in hundredths, recognize that hundredths arise when dividing an object by 100 and dividing tenths by 10	Read, write, order and compare numbers with up to 3 decimal places Read and write decimal numbers as fractions Identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths Solve problems which require knowing percentage and decimal equivalents of ½ , ¼ , 1/5 , 2/5 , 4/5 and those fractions with a denominator of a multiple of 10 or 25 Recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents Solve problems involving numbers up to 3 decimal places	Identify the value of each digit in numbers given to 3 decimal places and multiply and divide numbers by 10, 100 and 1,000 giving answers up to 3 decimal places Solve problems which require answers to be rounded to specified degrees of accuracy Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why Multiply 1-digit numbers with up to 2 decimal places by whole numbers Use written division methods in cases where the answer has up to 2 decimal places

				Solve simple measure and money problems involving fractions and decimals to 2 decimal places Round decimals with 1 decimal place to the nearest whole number Recognise and write decimal equivalents to ¼, ½ and ¾	Round decimals with 2 decimal places to the nearest whole number and to 1 decimal place	Associate a fraction with division and calculate decimal fraction equivalents for a simple fraction Recall and use equivalences between simple fractions, decimals and percentages, including in different contexts

Percentages

Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
					Recognise the per cent symbol (%) and understand that per cent relates to "number of parts per 100" Write percentages as a fraction with denominator 100, and as a decimal fraction	Recall and use equivalences between simple fractions, decimals and percentages, including in different contexts Solve problems involving the calculation of percentages and the use of percentages for comparison

Area, perimeter and volume

Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Describe and compare different capacities Use the language 'empty' 'full' and 'half full' to describe how much is in a container	Compare, describe and solve practical problems for capacity and volume Use half and a quarter to describe volume Measure and begin to record capacity and volume	Estimate and measure capacity using ml/l Estimate and measure volume using ml/l	Measure volume and capacity in ml and l.	Find the area of rectilinear shapes by counting squares Convert between different units of measure Measure and calculate the perimeter of a rectilinear figure (including squares) in centimetres and metres Find the perimeter of regular and irregular polygons	Measure and calculate the perimeter of composite rectilinear shapes in centimetres and metres Calculate and compare the area of rectangles (including squares), including using standard units, square centimetres (cm2) and square metres (m2), Estimate the area of irregular shapes Estimate volume and capacity	Recognise that shapes with the same areas can have different perimeters and vice versa Recognise when it is possible to use formulae for area and volume of shapes Calculate the area of parallelograms and triangles Calculate, estimate and compare volume of cubes and cuboids using standard units, including cubic centimetres (cm3) and cubic metres (m3), and extending to other units

Length, height, mass and converting units

Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Compare length, weight and capacity In meaningful contexts, find the longer or shorter, heavier or lighter and more/less full of two items Understand the mass of different objects	Compare, describe and solve practical problems for: lengths, height and mass Measure and begin to record the length, height and mass	Estimate and measure length/height in any direction (m/cm); mass (kg/g); temperature (°C); capacity (litres/ml) to the nearest appropriate unit Compare and order lengths, mass, volume/capacity and record the results using >, < and = Solve problems involving numbers, quantities and measures	Measure, compare, add and subtract lengths (m/cm/mm) and mass (kg/g) Read scales for mass in g and kg	Convert between different units of measure Measure and estimate mass, converting between g and kg	Convert between different units of metric measure 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	Solve problems involving the calculation and conversion of units of measure, using decimal notation up to 3 decimal places where appropriate 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 3 decimal places

Geometry - shape

Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Talk about and explore 2D and 3D shapes including circles, triangles, rectangles and cuboids. Compose and decompose shapes to recognise a shape can have other shapes within it Partition and combine shapes to make new shapes Identify similarities and differences between shapes Uses informal language and mathematical terms to describe shapes Select, rotate, manipulate and build shapes <u>Pattern</u> Copy and create a repeating pattern	Recognise and name common 2-D and 3-D shapes	Identify and describe the properties of 2-D shapes, including the number of sides, and line symmetry in a vertical line Compare and sort common 2-D and 3-D shapes and everyday objects Identify and describe the properties of common 3D shapes, including the numbers of edges, vertices and faces	Draw 2D shapes Makes 3D shapes using modelling materials Recognise 3D shapes in different orientations and describe them Identify horizontal and vertical lines and pairs of perpendicular and parallel lines Recognise angles as a property of shape or a description of a turn Recognise angles as a property of shape or a description of a turn 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	Recognise angles as a property of shape or a description of a turn Identify acute and obtuse angles and compare and order angles up to two right angles by size Compare and classify geometric shapes, including quadrilaterals and triangles, based on their properties and sizes Identify lines of symmetry in 2-D shapes presented in different orientations Complete a simple symmetric figure with respect to a specific line of symmetry Recognise and describe properties of 3D shapes	Know angles are measured in degrees: estimate and compare acute, obtuse and reflex angles Draw given angles, and measure them in degrees (°) Identify angles at a point and 1 whole turn (360 degrees) Identify angles at a point on a straight line and half a turn (180 degrees) 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 Identify 3-D shapes, including cubes and other cuboids, from 2-D representations	Draw given angles and measure them in degrees Recognise and find missing angles Estimate and compare acute, obtuse and reflex angles Compare and classify geometric shapes based on their properties and sizes Find unknown angles in any triangles, quadrilaterals, and regular polygons Illustrate and name parts of circles, including radius, diameter and circumference and know that the diameter is twice the radius Draw 2D shapes using given dimensions and angles

Spot patterns in the environment			than or less than a right angle Identify horizontal and vertical lines and pairs of perpendicular and parallel lines			Recognise, describe and build simple 3-D shapes, including making nets

Geometry – position and direction

Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Describe a familiar route Discuss routes and locations using words like 'in front of' and 'behind' Describe a sequence of events using 'first' and 'then'	Describe position, direction and movement, including whole, half, quarter and three-quarter turns Use the language of position, direction and motion, including: left and right, top, middle and bottom, on top of, in front of, above, between, around, near, close and far, up and down, forwards and backwards, inside and outside Practise counting and ordering 1st, 2nd and 3rd	Describe position, direction and movement, including movement in a straight line Distinguish between rotation as a turn and in terms of right angles for quarter, half and three-quarter turns (clockwise and anticlockwise)		Describe positions on a 2D grid as coordinates in the first quadrant Plot specified points and draw sides to complete a given polygon Describe movements between positions as translations of a given unit to the left/right and up/down	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	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 Draw and translate simple shapes on the coordinate plane, and reflect them in the axes

Money

Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
	Recognise and know the value of different denominations of coins and notes	Recognise and use symbols for pounds and pence Combine amounts to make different values	Add and subtract amounts of money to give change, using both £ and p in practical contexts	Estimate, compare and calculate different measures, including money in pounds and pence	Use all four operations to solve problems involving money in decimal notation	Use all four operations to solve problems involving money in decimal notation

Time

Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Order and sequence events using everyday language related to time	Sequence events in chronological order using language (for example, before and after) Recognise and use language relating to dates, including days of the week, weeks, months and years Compare, describe and solve practical problems for time Measure and begin to record time (hours, minutes, seconds) Tell the time to the hour and half past the hour and draw the hands on a clockface to show these times	Tell and write the time to five minutes, including quarter past/to the hour and draw the hands on a clockface to show these times Know the number of minutes in an hour and the number of hours in a day	Tell and write the time from an analogue clock, including using Roman numerals from I to XII, and 12-hour and 24-hour clocks 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 Know the number of seconds in a minute and the number of days in each month, year and leap year Compare durations of events	Solve problems involving converting from hours to minutes, minutes to seconds, years to months, weeks to days Read, write and convert time between analogue and digital 12- and 24-hour clocks	Convert measurements of time Solve problems involving measurements	Solve problems involving measurements of time

Statistics

Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
		Interpret and construct simple pictograms, tally chart, 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	Interpret and present data using bar charts, pictograms and tables Solve one-step and two-step questions using information presented in scaled bar charts and pictograms and tables	Interpret and present discrete and continuous data using appropriate graphical methods, including bar charts and time graphs Solve comparison, sum and difference problems using information presented in bar charts, pictograms, tables and other graphs	Solve comparison, sum and difference problems using information presented in a line graph Complete, read and interpret information in tables, including timetables	Interpret and construct pie charts and line graphs and use these to solve problems Calculate and interpret the mean as an average

Algebra

Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
						Use simple formulae Generate and describe linear number sequences Find pairs of numbers that satisfy an equation with two unknowns Enumerate possibilities of combinations of two variables Express missing number problems algebraically

Ratio

Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
						Solve problems involving the relative sizes of two quantities where missing values can be found by using integer multiplication and division facts Solve problems involving unequal sharing and grouping using knowledge of fractions and multiples Solve problems involving similar shapes where the scale factor is known or can be found