Maths Progression of Skills (based on White Rose Maths)

	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Place value: Counting	Verbally count beyond 20, recognising the pattern of the counting system.	Count to and across 100, forwards and backwards, beginning with 0 or 1, or from any given number. Count numbers to 100 in numerals: count in multiples of 2 5 and 10s	Count in steps of 2,3 and 5 from 0, and in 10s from and number, forward and backward.	Count from 0 in multiples of 4, 8, 50 and 100. Find 10 or 100 more or less than a given number	Count in multiples of 6, 7, 9, 25 and 1000. Count backwards through zero to include negative numbers	count forwards or backwards in steps of powers of 10 for any given number up to 1,000,000 count forwards and backwards with positive and negative whole numbers, including through zero	
Place Value: represent	Have a deep understanding of numbers to 10, including the composition of each number. Subitise (recognising quantities without counting) up to 5.	Identify and represent numbers using objects and pictorial representations. Read and write numbers to 100 in numerals Read and write numbers from 1 to 20 in words and numerals	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	identify, represent and estimate numbers using different representations Read and write numbers up to 1000 in numerals and words	identify, represent and estimate numbers using different representations 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	read, write, order and compare numbers to at least 1,000,000 and determine the value of each digit. read Roman numerals to 1000 (M) and recognise years written in Roman numerals	read, write, order and compare numbers to at least 10,000,000 and determine the value of each digit.
Place Value: Use PV and compare.	Compare quantities up to 10 in different contexts, recognising when one quantity is greater than, less than or the same as the other quantity.	Given a number, identify 1 more and 1 less. Use the language of equal to, more than, less than (fewer), most, least	Recognise the place value of each digit in a two-digit number (tens and ones) Compare and order numbers from 0 up to 100; use <,> and = signs	Recognise the place value of each digit in a three-digit number (hundreds, tens and ones) Compare and order numbers up to 1000	find 1000 more or less than a given number. recognise the place value of each digit in a four-digit number (thousands, hundreds, tens and ones) Compare and order numbers beyond 1000	read, write, order and compare numbers to at least 1,000,000 and determine the value of each digit	read, write, order and compare numbers to at least 10,000,000 and determine the value of each digit.
Place value: Problems and rounding			Use place value and number facts to solve problems	Solve number problems and practical problems involving these ideas	round any number to the nearest 10, 100 or 1000. solve number and practical problems that involve all of the above with increasingly large positive numbers	interpret negative numbers in context. round any number up to 1,000,000 to the nearest 10, 100, 1000, 10,000 and 100,000. solve number problems and practical problems that involve all of the above	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.
Addition and subtraction							
Addition and subtraction: Recall, represent, Use	Automatically recall (without reference to rhymes, counting or other aids) number bonds up to 5 (including subtraction facts) and some number bonds to 10, including double facts.	Read, write and interpret mathematical statements involving addition (+), subtraction (-) and equals (=) signs. Represent ant use number bonds and related subtraction facts within 20	Recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100. Show that addition of two numbers can be done in any order (Commutative) and	estimate the answer to a calculation and use inverse operations to check answers	estimate and use inverse operations to check answers to a calculation.	use rounding to check answers to calculations and determine in the context of a problem levels of accuracy	

			subtraction of one number from another cannot. Recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems.				
Addition and Subtraction: Calculations	Automatically recall (without reference to rhymes, counting or other aids) number bonds up to 5 (including subtraction facts) and some number bonds to 10, including double facts.	add and subtract one digit and two-digit numbers to 20, including zero	add and subtract numbers using concrete objects pictorial representations and mentally including: a two-digit number and ones; a two-digit number and 10s; two two-digit numbers; and adding three one-digit numbers	add and subtract numbers mentally including: a three-digit number and ones ; a three-digit number and 10s; and a three-digit number and hundreds add and subtract numbers with up to three-digits using formal written methods of columnar addition and subtraction	add and subtract numbers with up to four digits using formal written methods of columnar addition and subtraction where appropriate	add and subtract whole numbers with more than 4 digits including using formal written methods (columnar addition and subtraction) add and subtract numbers mentally with increasingly large numbers	perform mental calculations, including with mixed operations and large numbers use their knowledge of the order of operations to carry out calculations involving the four operations.
Addition and Subtraction: Solving Problems	Explore and represent patterns within numbers up to 10, including evens and odds, double facts and how quantities can be distributed evenly.	solve one step problems that involve addition and subtraction, using concrete objects and pictorial representations and missing number problems such as 7 = _ - 9	solve problems with addition and subtraction: using concrete objects and pictorial representations, including those involving numbers quantities and measures; and applying their increasing knowledge of mental and written methods	solve problems, including missing number problems, using number facts, place value and more complex addition and subtraction	solve addition and subtraction two-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, subtraction, multiplication and division and a combination of these including understanding the meaning of the equals sign	solve addition and subtraction multi-step problems in contexs, deciding which operations and methods to use and why
Multiplication and Division							
Multiplication and Division: Recall, Represent, Use		count in multiples of 2s, 5s and 10s.	recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables including recognising odd and even numbers 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 3, 4 and 8 multiplication tables	recall multiplication and division facts for multiplication tables up to 12 x 12 use place value known and derived facts to multiply and divide mentally, including: multiplying by 0 and 1; dividing by 1; multiplying together 3 numbers recognise and use factor pairs and commutativity in mental calculations	identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers know and use 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	identify common factors, common multiples and prime numbers use estimation to check to answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy

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						the notation for squared (^{2}) and cubed (^{3}).	
Multiplication and Division: calculation		make connections between arrays, number patterns and counting in 2s, 5s and 10s	calculate mathematical statements for multiplication and division within multiplication tables and write them using the multiplication division and equals signs	Write and calculate mathematical statements for multiplication and division using the multiplication tables that they know, including for two-digit numbers times one-digit numbers, using mental and progressing to formal written methods	multiply two-digit and three-digit numbers by a one-digit number using formal written layout	multiply numbers up to four digits by a one-or two-digit number using a formal written method including long multiplication for two-digit numbers multiply and divide numbers mentally drawing upon known facts divide numbers up to four digits by a one-digit number using formal written method of short division and interpret remainders appropriately for the context multiply and divide whole numbers and those involving decimals by 10, 100 and 1000	multiply multi-digit numbers up to four digits by a two-digit whole number using the formal written method of long multiplication divide numbers up to four digits by a two-digit whole number using the formal written method of long division and interpret remainders as whole number remainders, fractions or by rounding as appropriate for the context divide numbers up to four digits by a two-digit number using the formal written method of short division where appropriate, interpreting remainders according to the context perform mental calculations including with mixed operations and large numbers
Multiplication and Division: Solve Problems		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	solve problems involving multiplication and division using materials, arrays, repeated addition, mental methods, and multiplication and division facts including problems in contexts	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	solve problems involving multiplying and adding, including using the distributive law to multiply 2 digit numbers by 1 digit, integer scaling problems and harder correspondence problems such as n objects are connected to m objects	solve problems involving multiplication and division including using their knowledge of factors and multiples, squares and cubes solve problems involving multiplication and division, including scaling by simple fraction and problems involving simple rates	solve problems involving addition subtraction multiplication and division
Multiplication and Division: Combined Operations						solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign	use their knowledge of the order of operations to carry out calculations involving the four operations
Fractions, Decimals, Percentages							
Fractions: Recognise and Write	recognise half of a quantity through sharing	recognise find and name a half as one of two equal	recognise find name and write fractions 1/3, ¼, 2/4	count up and down in tenths; recognise that tenths arise from dividing an object	count up and down in hundredths;	identify name and write equivalent fractions of a given fraction, represented	

		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	and 3/4 of a length, shape, set of objects or quantity.	into 10 equal parts and in dividing one-digit numbers in or quantities by 10 recognise, find and write fractions of a discrete set of objects: unit fractions and non-unit fractions with small denominators recognise and use fractions as numbers: unit fractions and non-unit fractions with small denominators	recognise that hundredths arise when dividing an object by 100 and dividing tenths by 10	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 mixed number for example (for example 2/5 + 4/5 = 6/5 = 1 1/5)	
Fractions: Compare			recognise the equivalence of 2/4 and 1/2	recognise and show using diagrams, equivalent fractions with small denominators compare and order unit fractions, and fractions with the same denominators	recognise and show using diagrams, families of common equivalent fractions	compare and order fractions whose denominators are all 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
Fractions: Calculations			write simple fractions for example ½ of 6 = 3	add and subtract fractions with the same denominator within one whole (for example 5/7 +1/7 = 6/7)	add and subtract fractions with the same denominator	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	add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions. Multiply simple pairs of proper fractions, writing the answer in its simplest form (for example ¼ x ½ = 1/8) Divide proper fractions by whole numbers (for example 1/3 ÷ 2 = 1/6)
Fractions: Solve Problems				solve problems that involve all of the above	solve problems involving increasingly hard fractions to calculate quantities, and fractions to divide quantities, including non-unit fractions where the answer is a whole number		
Decimals: Recognise and write					recognise and write decimal equivalents of any number of tenths or hundredths recognise and write decimal equivalent to ¼, ½, ¾,	read and write decimal numbers as fractions for example 0.71 = 71/100 recognise and use thousandths and relate them to tenths hundredths and decimal equivalents	identify the value of each digit in numbers given to three decimal places

Decimals: Compare					round decimals with one decimal place to the nearest whole number compare numbers with the same number of decimal places up to two decimal places	round decimals with two decimal places to the nearest whole number and to one decimal place read, write, order and compare numbers with up to three decimal places	
Decimals: Calculations and Problems					find the effect of dividing a one- or two-digit number by 10 and 100, identifying the value of the digits in the answers as ones, tenths and hundredths	solve problems involving number up to three decimal places	multiply and divide numbers by 10, 100 and 1000 giving answers up to three decimal places multiply one-digit numbers with up to two decimal places by whole numbers use written division methods in cases where the answer has up to two decimal places solve problems which require answers to be rounded to specific degrees of accuracy
Fractions, Decimals and Percentages					solve simple measure and money problems involving fractions and decimals to two decimal places	recognise the percent symbol (%) and understand that percent relates to 'number of parts per hundred' and write percentages as a fraction with the denominator 100 and as a decimal Solve problems which require knowing percentage and decimal equivalents of ½, 1/4 , 1/5, 2/5, 4/5 and those fractions with the nominator of a multiple of 10 or 25	associate a fraction with division and calculate decimal fraction equivalents for a simple fraction recall and use equivalence is between simple fractions decimals and percentages including in different contexts
Ratio and Proportion							
Ration and Proportion							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 the calculation of percentages (for example, of measures, and such as 15% of 360) and

							the use of percentages for comparison solve problems involving similar shapes where the scale factor is known or can be found solve problems involving unequal sharing and grouping using knowledge of fractions and multiples
Algebra							use simple formula generate and describe linear number sequences express missing number problems algebraically find pairs of numbers that satisfy an equation with two unknowns enumerate possibilities of combinations of two variables
Measurement							
Using Measure	compare capacities, heights, lengths, time and days of the week	compare, describe and solve practical problems for: lengths and height (long/short, longer/shorter, tall/short, double/half); mass/weight (heavy/light, heavier than, lighter than); capacity and volume (full/empty, more than, less than, half full, quarter); and time (quicker, slower, earlier, later) measure and begin to record the following: lengths and height; mass/weight; capacity/volume; and time (hours, minutes, seconds)	choose and use appropriate standard units to estimate and measure: length/ height in any direction (m/cm); mass (kg/g); temperature (°C); and capacity (l/ml), to the nearest appropriate unit using rulers scales thermometers and measuring vessels compare and order Length, mass, volume/ capacity and record the results using > <and =	measure, compare, add and subtract lengths (m/cm/mm); mass (kg,g); and volume/capacity (l/ml)	convert between different units of measure (for example, km to m, hour to minute) estimate, compare and calculate different measures	convert between different units of metric measure (for example km and m; cm and m; g and kg; and l and ml) understand and use approximate equivalence is between metric units and common imperial units such as inches pounds and pints use all four operations to solve problems involving measure (for example length, mass, volume,) using decimal notation including scaling	solve problems involving the calculation and conversion of units of measure using decimal notation up to three 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 notations up to three decimal places convert between miles and kilometres
Measurement: Money	exposure to a range of coins (1p, 2p, 5p, 10p, 20p) throughout continuous provision	recognise and know the value of different denominations of coins (1p, 2p, 5p, 10p, 20p, 50p) and notes (£5, £10, £20)	recognise and use the symbols for pounds (£) and pence (p)	add and subtract amount of money to give change using both pounds and pence in practical context	estimate, compare and calculate different measures including money in pounds and pence	use all four operations to solve problems involving measure (for example money)	

			combine amounts to make a particular value find different combinations of coins that equal the same amount of money solve simple problems in a practical context involving addition and subtraction of money of the same unit including giving change				
Measurement: Time	sequence events of our day in chronological order and use language for example, yesterday and tomorrow. Recognise the difference between and use the language of day and night	sequence events in chronological order using language (for example, before and after, next, first, today, yesterday, tomorrow, morning, afternoon and evening) recognise and use language relating to dates, including days of the week, weeks, months and years tell time to the hour and half past the hour and draw hands on the clock face to show these times	compare and sequence intervals of time using the language longer/shorter and longest/shortest tell and write the time to five minutes, including quarter past/to the hour and draw the hands on the clock face 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 too 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 (for example to calculate the time taken by a particular event or task)	read write and convert time between analogue and digital 12- and 24-hour clocks solve problems involving converting from hours to minutes; minutes to seconds; years to months; and weeks to days	solve problems involving converting between units of time	use, read, write and convert between standard units converting measurements of time from a smaller unit of measure to a larger unit and vice versa
Measurement: Perimeter, Area, Volume				measure the perimeter of simple 2D shapes	measure and calculate the perimeter of a rectilinear figure (including squares) in centimetres and metres find the area of rectilinear shapes by counting squares	measure and calculate the perimeter of composite rectilinear shapes in centimetres and metres calculate and compare the area of rectangles including squares and including using standard units, square centimetres (cm^2) and square metres (m^2) and estimate the area of irregular shapes estimate volume for example using one-	recognise that shapes with the same area 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

						centimetre cubed blocks to build cuboids including cubes and capacity (for example using water)	centimetres (cm^3) and cubic metres (m^3) and extending to other units (for example mm^3 and km^3)
Geometry							
Geometry: 2D shapes	recognise and sort 2D shapes for example rectangles, circles and triangles	recognise and name common 2D shapes (for example rectangles (including squares), circles and triangles)	identify and describe the properties of 2D shapes, including the number of sides and line of symmetry in a vertical line identify 2D shapes on the surface of 3D shapes (for example a circle on a cylinder and a triangle on a pyramid) compare and sort common 2D shapes and everyday objects	draw 2D shapes	compare and classify geometric shapes including quadrilaterals and triangles based on their properties and sizes identify lines of symmetry in 2D shapes presented on different orientations	distinguish between regular and irregular polygons based on reasoning about equal sides and angles use the properties of rectangles to deduce related facts and find missing lengths and angles	draw 2D shapes using given dimensions and angles compare and classify geometric shapes based on their properties and sizes illustrate and name parts of circles including radius and diameter and circumference and know that the diameter is twice the radius
Geometry: 3D shapes		recognise and name common 3D shapes (for example cuboids including cubes pyramids and spheres)	Identify and describe the properties of 3D shapes, including the number of edges, vertices and faces compare and sort common 3D shapes and everyday objects	make 3D shapes (cubes, cuboids, prisms, cylinders, pyramids, cones, spheres) using modelling materials recognise 3D shapes in different orientations and describe them		identify 3D shapes including cubes and other cuboids from 2D representations	recognise describe and build simple 3D shapes including making nets
Geometry: Angles and lines				recognise angles as a property of shape or a description of a turn identify right angles recognise that two right angles make half a turn, three make 3/4 of a turn and four a complete turn identify whether angles are greater than or less than a right angle identify horizontal and vertical lines and pairs of perpendicular and parallel lines	identify acute and obtuse angles and compare and order angles up to two right angles by size identify lines of symmetry in 2D shapes represented in different orientations complete a simple symmetrical figure with respect to a specific line of symmetry	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 one whole turn (total 360°); angles at a point on a straight line and half a turn (180°); and other multiples of 90°	find unknown angles in any triangles, quadrilaterals and regular polygons recognise angles where they meet at a point, are on a straight line, or are vertically opposite and find missing angles
Geometry: Position and Direction	describe the position of an object using language for example, in front, behind,	describe position direction and movement, including whole, half, quarter and three-quarter turns	order and arrange combinations of mathematical objects in patterns and sequences		describe positions on a 2D grid as coordinates in the first quadrant	identify describe and represent the position of a shape following a reflection or translation, using the	describe positions on the full coordinate grid (all 4 quadrants)

	inside, outside, on top, under.		use mathematical vocabulary to describe position, direction and movement , including movement in a straight line and distinguishing between rotation as a turn and in terms of right angles for quarter, half and three quarter turns (clockwise and anticlockwise)		describe movements between positions as translations of a given unit to the left/ right and up/ down plot specified points and draw sides to give to complete a given polygon	appropriate language, and know that the shape has not changed	draw and translate simple shapes on the coordinate plane, and reflect them in the axes
Statistics							
Statistics: Present and interpret			interpret and construct simple pictograms, tally charts, block diagrams and simple tables	interpret and present data using bar charts, pictograms and tables	interpret and present discrete and continuous data using appropriate graphical methods including bar charts and time graphs	Complete, read and interpret information in tables including timetables	interpret and construct pie charts and line graphs and use these to solve problems
Statistics: Solve Problems			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	solve one-step and two-step questions (for example How many more? and How many fewer?) using information presented in scaled bar chart and pick to grammes and tables	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	calculate and interpret the mean as an average