KRISHNA AVANTI
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White Rose EDUCATION

Maths Progression Document

Strand	Rec	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Place Value	- Recognising numbers to 10 and the value that they hold - Count to 10 - Count to 20	- 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's, 5's and 10's - 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 numerals and words - Given a number, identify one more and one less **Autum 1** **Spring 1** **Spring 2** **Summer 2**	- Count in steps of 2, 3 and 5 from 0 - Count in tens from any number, forward and backward - Read and write numbers to at least 100 in numerals and in words - Identify, represent and estimate numbers using different representations - Recognise the place value of each digit in a two-digit number - Compare and order numbers from 0 up to 100; using <, > and = - Use place value and number facts to solve problems **Autumn 1**	- Count from 0 in multiples of 4, 8, 50 and 100 - Find 10 or 100 more or less than a given number - Identify, represent and estimate numbers using different representations - Read and write numbers up to 1000 in numerals and words - Recognise the place value of each digit in a 3-digit number - Compare and order numbers up to 1000 - Solve number problems and practical problems involving these ideas. **Autumn 1**	- Count in multiples of 6, 7 9, 25 and 1000 - Identify, represent and estimate numbers using different representations - Read Roman Numerals to 100, know the numeral system changed over time. - Find 1000 more or less than a given number - Recognise the place value of each digit in a 4-digit number - Order and compare numbers beyond 1000 - Round any number to the nearest 10, 100 or 1000 - Solve number and practical problems that involve all the above. **Autumn 1**	- Count forwards or backwards in steps of powers of 10 - Count forwards and backwards with positive and negative whole numbers, through zero - Read, write, order and compare numbers to at least 1 000 000 and determine the value of each digit - Read Roman Numerals to 1000 and recognise years written in Roman Numerals - Interpret negative numbers in context - Round any number upto 1M to the nearest 10, 100, 1000, 10000 and 100000 - Solve number problems and practical problems that involve all of the above. **Autumn 1** **Summer 2**	- 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 the above **Autumn 1**
Addition and subtraction	- Counting on to find how many more of something there is	- Add and subtract 1-digit and 2-digit numbers to 20Solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations and missing number problems **Autumn 1** **Spring 1**	- Add and subtract numbers using concrete objects, pictorials representations and mentally; 2-digit and ones, 2-digit and tens, two 2-digit and adding three 1-digit numbers - Solve problems with addition and subtraction: using concrete objects and pictorial representations, and applying their increasing knowledge of mental and written methods. **Autumn 1**	- Add and subtract numbers mentally, including: a 3-digit and ones, 3-digit and tens, 3-digit and hundreds - Add and subtract numbers with up to three digits, using formal written methods or column addition and subtraction - Solve problems, including missing number problems, using number facts, place value and more complex addition and subtraction **Autumn 1**	- Add and subtract numbers with up to 4-digits using the formal written methods of column addition and subtraction - Solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why **Autumn 1**	- Add and subtract whole numbers with more than 4-digits, including using formal written methods - Add and subtract numbers mentally with increasingly large numbers - Solve addition and subtraction multi-steps 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 equal's sign **Autumn 1**	- 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. - Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why **Autumn 1**

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Multiplication and division Recall / Use	- To explore sharing and grouping		- Recall and use multiplication and division facts for 2, 5 and 10, including odd and even numbers - Show that multiplication of two numbers can be commutative and division is not - Calculate mathematical statements for multiplication and division and write them using the x, ÷ and = - Solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods and multiplication and division facts **Spring 1**	- Recall and use multiplication and division facts for the 3, 4 and 8 tables. **Autumn 2** **Spring 1**	- Recall multiplication and division facts up to 12 x 12 - Use place value, known and derivced facts to multiply and divide mentally – x by 0 and 1, dividing by 1, x 3 numbers together - Recognise and use factor pairs **Autumn 2** **Spring 1**	- Identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers - Know and use the vocabulary of prime numbers, prime factors and composite (non-prime) numbers - Establish whether a number up to 100 is prime and recall prime numbers up to 19 - Recognise and use square numbers and cube numbers, and the notation for squared (2) and cubed (3) **Autumn 2**	- Identify common factors, common multiples and prime numbers - Use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy **Autumn 1**
Calculations			- Calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication, division and equals sign **Spring 1**	- Write and calculate mathematical statements for multiplication and division using the multiplication and division using the multiplication tables that they know, two digit x 1 digit using mental and processing to formal written methods **Autumn 2** **Spring 1**	- Multiply two-digit and three-digit numbers by a one-digit number using formal written layout **Spring 1**	- Multiply numbers up to 4 digits by a one- or two-digit number using a formal written method, including long multiplication for two-digit numbers - Multiply and divide numbers mentally drawing upon known facts - Divide numbers up to 4 digits by a one-digit number using the formal written method of short division and interpret remainders appropriately - Multiply and divide whole numbers and those involving decimals by 10, 100 and 1000 **Autumn 2** **Spring 1**	- Multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication - 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 - 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 - Perform mental calculations, including with mixed operations and large numbers **Autumn 2**
Problems	-	- Solve one-step problems involving multiplication and division, by calculating the answer using concrete objects, pictorial representations and arrays	- Solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts **Spring 2**	- 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 two-digit numbers by one digit, integer scaling problems and harder correspondence problems **Spring 1**	- 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 fractions and problems involving simple rates **Autumn 2**	- solve problems involving addition, subtraction, multiplication and division **Autumn 1** - Use their knowledge of the order of operations to carry out

		Summer 1		**Spring 1**		**Spring 1** - Solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign **Spring 1**	calculations involving the four operations **Autumn 2**
Fractions, decimals and percentages		**Fractions** - 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 **Summer 1**	Fractions - recognise, find, name and write fractions third, quarters, of a length, shape, set of objects or quantity - Recognise the equivalence of two quarters and one half. - Write simple fractions, e.g. half of 6 Summer 1	**Fractions** - 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 - 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 and show equivalent fractions with small denominators - Compare and order unit fractions and fractions with the same denominators. - Add and subtract fractions with the same denominator within one whole - Solve problems that involve all of the above **Spring 2** **Summer 1**	**Fractions** - Count up and down in hundredths; recognise that hundredths arise when dividing an object by one hundred and dividing tenths by ten. - Recognise and show families of common equivalent fractions - Add and subtract fractions with the same denominator - Solve problems involving increasingly harder fractions to calculate quantities and fractions to divide quantities. **Spring 2** **Summer 1** **Decimals** - Recognise and write decimal equivalents of any number of tenths or hundredths - Recognise and write decimals equivalents to quarters and halves - Round decimals with one decimal place to the nearest. Whole number - Compare numbers with the same number of decimals places up to two decimals places **Spring 2** **Summer 1** - Solve simple measure and money problems involving fractions and decimals to two decimals places. **Spring 2** **Summer 1**	**Fractions** - 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 numbers - 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 **Autumn 2** **Decimals** - Read and write decimal numbers as fractions - 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 - Read, write, order and compare numbers with up to three decimal places **Spring 2** **Summer 2** - Recognise the percent symbol (%) and understand that percent 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 halves, quarters and fifths and fractions with a denominator of a multiple of 10 or 25 **Spring 2**	**Fractions** - Use common factors to simplify fractions - Use common multiples to express fractions in the same denomination - Compare and order fractions - Add and subtract fractions with different denominators and mixed numbers - Multiply simple pairs of proper fractions writing the answer in its simplest form - Divide proper fractions bu whole numbers **Autumn 2** **Decimals** - Identify the value of each digit in numbers given to three decimal places **Spring 2** - Associate a fraction with division and calculate decimal fraction equivalents - Recall and use equivalences between simple fractions, decimals and percentages **Spring 2**
Ratio and proportion, algebra		**Algebraic thinking** - solve one-step problems that involve	**Algebraic thinking** - recognise and use the inverse relationship between	**Algebraic thinking** - solve problems, including missing number problems	**Algebraic thinking** - solve problems, including missing number problems	**Algebraic thinking** - solve problems, including missing number problems	- solve problems involving the relative sizes of two quantities where missing values can be

		addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as 7 = χ – 9	addition and subtraction and use this to check calculations and solve missing number problems				found by using integer multiplication and division facts - solve problems involving the calculation/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 - use simple formulae - 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 **Spring 1**
Measurement	- To compare mass and capacity using everyday objects - To explore length and height - To compare length and height using everyday objects - To discuss the sequence of a day - To discuss day and night	**Using measure** - Compare, describe and solve practical problems for: Lengths and heights, Mass/weight, capacity and volume, time - Measure and begin to record: lengths and heights, mass/weight, capacity and volume and time **Spring 2** **Summer 2** **Money** - Recognise and know the value of different denominations of coins and notes **Summer 2** **Time** - Sequence events in chronological order using the correct terms - Recognise and use language relating to dates, including days of the week, weeks, months and years - Tell the time to the hour and half past the hour and draw the	**Using measure** - Choose and use appropriate standard units to estimate and measure length/height in any direction (m/cm), mass (kg/g), temperature (°C); capacity (litres/ml) to the nearest appropriate unit, using rulers, scales, thermometers and measuring vessels - compare and order lengths, mass, volume/capacity and record the results using >, < and = **Spring 2** **Money** - recognise and use symbols for pounds and pence - Combine amounts to make a particular value - Find different combinations of coins that equal the same amounts of money - Solve simple problems in a practical context involving addition and subtraction of money of the same unit **Spring 1** **Time** - compare and sequence intervals of time	**Using measure** - measure, compare, add and subtract: lengths (m/cm/mm); mass (kg/g); volume/capacity (l/ml) **Spring 2** **Money** - Add and subtract amounts of money to give changes **Summer 1** **Time** - 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, a.m./p.m., 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 **Summer 2**	**Using measure** - Convert between different units of measure [for example, kilometre to metre; hour to minute] - estimate, compare and calculate different measures **Spring 1** **Summer 2** **Money** - Estimate, compare and calculate different measure, including money in pounds and pence **Summer 1** **Time** - 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; weeks to days **Summer 2** **Perimeter, area, volume** - Measure and calculate the perimeter of a rectilinear figure in centimetres and metres - Find the area of rectilinear shapes by counting squares **Autumn 2** **Spring 1**	**Using measure** - 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 - use all four operations to solve problems involving measure [for example, length, mass, volume, money] using decimal notation, including scaling **Spring 2** **Summer 1** **Money** - Use all four operations to solve problems **Summer 2** **Time** - Solve problems involving converting between units of time **Summer 2** **Perimeter, area, volume** - 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 (cm2) and square metres (m2) and estimate the area of irregular shapes - estimate volume and capacity	**Using measure** - solve problems involving the calculation and conversion of units of measure, using decimal notation up to 3 d.p. 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 d.p. - convert between miles and kilometres **Autumn 2** **Time** - Use, read and write and convert between standard units - Converting measurements of time from a smaller unit of measure to a larger unit and vice versa **Autumn 2** **Perimeter, area, volume** - 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

		hands on a clock face to show these times **Summer 2**	- tell and write the time to five minutes, including quarter past/to the hour and draw the hands on a clock face to show these times - know the number of minutes in an hour and the number of hours in a day **Summer 1**	Perimeter, area, volume - Measure the perimeter of simple 2-D shapes **Spring 1**		**Spring 2** **Summer 2**	- 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 **Spring 2**
Geometry	- To identify and name circles and triangles - To explore shapes in the environment - Describe the position of an object - Identify and name shapes with 4 sides - Explore 3D shapes - To identify repeating patterns	**2D Shapes** - Recognise and name common 2-d shapes **Autumn 2** **3D Shapes** - Recognise and name common 3D shapes **Autumn 2** **Position and direction** - Describe position, direction and movement, including whole, half, quarter and three-quarter turns **Summer 2**	**2D Shapes** - Identify and describe the properties of 2D shapes - Identify 2-D shapes of the surface of 3D shapes - Compare and sort common 2D shapes and everyday objects **Autumn 2** **3D Shapes** - Recognise and name common 3-D shapes - Compare and sort common 3D shapes and everyday objects **Autumn 2** **Position and direction** - order and arrange combinations of mathematical objects in patterns and sequences - 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 anti-clockwise) **Summer 2**	**2D Shapes** - Draw 2D shapes **3D Shapes** - Make 3D shapes using modelling materials - Recognise 3D shapes in different orientations and describe them **Summer 2** **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 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 - identify horizontal and vertical lines and pairs of perpendicular and parallel lines **Summer 2**	**2D Shapes** - 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 **Summer 2** **Angles and lines** - identify acute and obtuse angles and compare and order angles up to two right angles by size - 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 **Summer 2** **Position and direction** - describe positions on a 2-D grid as coordinates in the first quadrant - describe movements between positions as translations of a given unit to the left/right and up/down - plot specified points and draw sides to complete a given polygon **Summer 2**	**2D Shapes** - 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 **Summer 1** **3D Shapes** - Identify 3D shapes from 2D representations **Summer 1** **Angles and lines** - 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 (total 180°) ¬ other multiples of 90° **Summer 1** **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 **Summer 1**	**2D Shapes** - draw 2-D 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, diameter and circumference and know that the diameter is twice the radius **Summer 1** **3D Shapes** - Recognise, describe and build simple 3D shapes **Summer 1** **Angles and lines** - 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 **Summer 1** **Position and direction** - 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 **Summer 1**
Statistics			- interpret and construct simple pictograms, tally charts, block diagrams and simple tables - ask and answer simple questions by counting the number of objects in each category and sorting the categories by quantity	- interpret and present data using bar charts, pictograms and tables - solve one-step and two-step questions **Summer 2**	- 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 **Summer 2**	- complete, read and interpret information in tables, including timetables - solve comparison, sum and difference problems using information presented in a line graph **Spring 2**	- interpret and construct pie charts and line graphs and use these to solve problems - calculate and interpret the mean as an average **Spring 2**

			- ask and answer questions about totalling and comparing categorical data **Summer 2**				