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Subject: Maths Progression Plan

A Reception Mathematician should be able to:
Count objects, actions and sounds. They will subitise groups of objects. Children will link the number symbol with the cardinal number value, count beyond ten and compare numbers. They will understand the 'one more/one less than' relationship between consecutive numbers. Children will explore the composition of numbers to ten and automatically recall number bonds for numbers 0-10. They will select, rotate and manipulate shapes in order to develop spatial reasoning skills and compose and decompose shapes to recognise that a shape can have other shapes within it, just as numbers can. Children will continue, copy and create repeating patterns and compare length, weight and capacity.

A Year 1 Mathematician should be able to:	
Number and Place Value	➢ count to and across 100, forward and backward, beginning with 0 or 1, or from any given number ➢ count in multiples of 2s, 5s and 10s ➢ read and write numbers to 100 in numerals ➢ given a number, I can identify 1 more or 1 less ➢ read and write numbers from 1 to 20 in numerals and words
Addition and Subtraction	➢ read, write and interpret mathematical statements involving + - = signs ➢ represent and use number bonds and related subtractions 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 number problems ➢ add and subtract 1-digit and 2- digit numbers to 20, including zero
Multiplication and Division	➢ solve one-step problems involving multiplication and division, by calculating the answer using concrete objects, pictorial representations and arrays with the support of my teacher
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
Measures	➢ compare, describe and solve practical problems for: lengths and heights and mass/weight ➢ compare, describe and solve practical problems for: capacity and volume ➢ recognise and know the value of different denominations of coins and notes

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	➢ sequence events in chronological order using language (e.g. before, after, next, first, today, yesterday, tomorrow, morning, afternoon, evening) ➢ recognise and use language relating to dates, including days of the week, weeks, months, years ➢ measure and begin to record the following: mass/weight ➢ measure and begin to record the following: length and heights ➢ compare, describe and solve practical problems for: time ➢ can measure and begin to record the following: capacity and volume ➢ can tell the time to the hour and half past the hour and draw the hands on a clock face to show these times
Geometry	➢ recognise and name common 2D shapes, including circles and triangles ➢ identify and describe common 2D shapes, including: rectangles (including squares) circles, triangle ➢ describe position, direction and movement, including half, quarter and three-quarter turns ➢ describe position, direction and movement, including half, quarter and three-quarter turns ➢ recognise and name common 3D shapes, including: cuboids (including cubes), pyramids, spheres

A Year 2 Mathematician should be able to:	
Number and Place Value	➢ count in steps of 2 and 5 from 0, and in tens from any number, forward and backward ➢ read and write numbers to at least 100 in numerals and in words ➢ compare and order numbers from 0 up to 100; use < > and = signs ➢ recognise the place value of each digit in a 2-digit number ➢ count in steps of 3 from 0, and in tens from any number, forward and backward
Addition and Subtraction	➢ recall and use addition and subtraction facts to 20 fluently and derive and use related facts up to 100 ➢ add and subtract numbers mentally, including: 2-digit numbers and ones; 2-digit numbers and tens; two 2- digit numbers; adding three 1-digit numbers ➢ understand that addition of any two numbers can be done in any order (commutative) and subtraction of one number from another cannot ➢ recognise and use the inverse relationship between addition and subtraction and use this to check calculations and missing number problems

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Multiplication and Division	➢ recall and use multiplication and division facts for the 2, 5 and 10 tables, including recognising odd and even numbers ➢ calculate the mathematical statements for multiplication and division within the multiplication tables and write them using the x ÷ and = signs ➢ understand that multiplication of two numbers can be one in any order (commutative) and division of one number by another cannot ➢ recognise that division is the inverse of multiplication and use to check calculations
Fractions	➢ recognise, find, name and write factions 1/3, 1/4, 2/4, 1/2, 3/4 of a length, shape, set of objects, or quantity ➢ write simple fractions and recognise the equivalence
Measures	➢ compare and order lengths and mass, and record the results using >, < and = ➢ recognise and use symbols for pounds (£) and pence (p); combine amounts to make particular values ➢ tell and write the time to quarter past/to the hour and draw the hands on a clock face to show these times ➢ compare and order volume/capacity and record the results using >, < and = ➢ solve simple problems in a practical context involving addition and subtraction of money of the same unit, including giving change ➢ choose and use appropriate standard units to estimate and measure: length/height in any direction (m/cm); mass (kg/g) to the nearest appropriate unit, using rulers and scales ➢ 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 ➢ choose and use appropriate standard units to estimate and measure: temperature (°C); capacity (l/ml) to the nearest appropriate unit, using thermometers and measuring vessels ➢ compare and sequence intervals of time ➢ 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, including giving change
Geometry	➢ identify and describe the properties of 2D shapes, including the number of sides and line symmetry in a vertical line ➢ identify and describe the properties of 3D shapes, including the number of edges, vertices and faces ➢ identify 2D shapes on the surface of 3D shapes ➢ order and arrange combinations of mathematical objects in patterns and sequences

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	➢ use mathematical vocabulary to describe position, direction and movement, including movement in a straight line distinguishing between rotation as a turn and in terms of right angles for quarter, half and three-quarter turns (clockwise and anti-clockwise) compare and sort common 2D and 3D shapes and everyday objects
Statistics	➢ interpret and construct: 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 ➢ ask and answer questions about totalling and compare categorical data

A Year 3 Mathematician should be able to:	
Number and Place Value	➢ 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 to 1,000 in numerals and words ➢ compare and order numbers up to 1000 ➢ recognise the place value of each digit in a 3-digit number
Addition and Subtraction	➢ add and subtract numbers mentally, including: 3-digit number and ones; 3-digit numbers and tens; 3-digit numbers and hundreds ➢ add and subtract numbers with up to 3 digits, using formal written methods of columnar addition and subtraction ➢ estimate the answer to a calculation and use the inverse operations to check my answers ➢ count up and down in tenths; recognise that tenths arise from dividing an object into ten equal parts and in dividing numbers or quantities by 10 ➢ add and subtract measures (length, mass and volume) with up to 3 digits, using formal written methods of columnar addition and subtraction ➢ solve word problems including missing number problems, number facts, place value and more complex addition and subtraction
Multiplication and Division	➢ recall and use the multiplication and division facts for the 3, 4 and 8 tables ➢ write and calculate mathematical statements for multiplication using known multiplication tables, including 2- digit x 1-digit, using mental and progressing to formal written methods

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	➢ write and calculate mathematical statements for division using known multiplication tables, including 2-digit x 1-digit, using mental and progressing to formal written methods ➢ write and calculate mathematical statements for multiplication and division using known multiplication tables, including use of money and length ➢ practise formal methods of multiplication and division, including a high focus on reasoning.
Fractions	➢ recognise and show, using diagrams, equivalent fractions with small denominators ➢ 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 ➢ add and subtract fractions with the same denominator within one whole
Measures	➢ measure the perimeter of simple 2D shapes ➢ estimate and read time with increasing accuracy to the nearest minute; tell and write the time from an analogue clock, including using Roman numerals from I to XII ➢ measure, compare, add and subtract: lengths (m/cm/mm); mass (kg/g); volume/ capacity (l/ml) ➢ read 12-hour and 24-hour clocks ➢ record and compare time in terms of seconds, minutes, hours ➢ use vocabulary such as o'clock, am/pm, morning, afternoon, noon and midnight ➢ know the numbers 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 time taken by particular events or tasks
Geometry	➢ make 3D shapes using modelling materials; recognise 3D shapes in different orientations; and describe them ➢ draw 2D shapes ➢ recognise angles are 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 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
Statistics	➢ interpret and present data using: bar charts; pictograms and tables

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	➢ solve 1-step and 2-step questions such as 'How many more?' and 'How many fewer?' using information presented in scaled bar charts, pictograms and other graphs

A Year 4 Mathematician should be able to:	
Number and Place Value	➢ count backwards through zero to include negative numbers ➢ count in multiples of 6, 7, 9, 25 and 1000 ➢ read Roman numerals to 100 and understand that over time, the numeral system changes to include the concept of zero and place value ➢ find 1000 more or less than a given number ➢ compare and order numbers beyond 1000 ➢ round any number to the nearest 10, 100 or 1000
Addition and Subtraction	➢ add and subtract numbers with up to 4 digits using the formal written methods of columnar addition and subtraction, where appropriate ➢ estimate and use inverse operations to check answers to a calculation ➢ solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why
Multiplication and Division	➢ recall multiplication and division facts for tables up to 12x12 ➢ recognise and use factor pairs and commutativity in mental calculations ➢ multiply 2-digit and 3-digit numbers by a 1-digit number using formal written layout ➢ divide 2-digit and 3-digit numbers by a 1-digit number using formal written layout with no remainder ➢ use place value, known and derived facts to multiply and divide mentally, including multiplying by 0 and 1; multiplying three numbers together ➢ find the effect of multiplying a number with up to 2 decimal places by 10 and 100, identifying the value of the digits in the answer as ones, tenths and hundredths
Fractions	➢ recognise and show, using diagrams, families of common equivalent fractions ➢ add and subtract fractions with the same denominator ➢ find the effect of dividing a 1- digit or 2-digit number by 10 and 100, identifying the value of the digits in the answer as ones, tenths and hundredths

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	➢ count up and down in hundredths; recognise that hundredths arise from dividing an object into one 100 equal parts and in dividing numbers or quantities by 100 ➢ recognise and write decimals equivalents of any number of tenths or hundredths ➢ recognise and write decimal equivalents to ¼, ½ and ¾ ➢ 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
Measures	➢ read, write and convert time between analogue and digital 12- and 24-hour clocks ➢ measure and calculate the perimeter of a rectilinear figure (including squares) in cm and m ➢ find the area of rectilinear shapes by counting squares ➢ convert between different units of measure (e.g. km to m; hr to min)
Geometry	➢ compare and classify geometric shapes, including quadrilaterals and triangles, based on their properties and sizes ➢ describe positions on a 2D grid as coordinates in the first quadrant ➢ identify lines of symmetry in 2D shapes presented in different orientations ➢ complete a simple symmetric figure with respect to a specific line of symmetry ➢ describe positions on a 2D 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 ➢ identify acute and obtuse angles, and compare and order angles up to two right angles by size
Statistics	➢ 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

A Year 5 Mathematician should be able to:	
Number and Place Value	➢ count forward or backwards in steps of powers of 10 for any given number up to 1,000,000 ➢ count up and down in thousandths; recognise that thousandths arise from dividing an object into 1000 equal parts and in dividing numbers or quantities by 1000

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	➢ interpret negative numbers in context, count forwards and backwards with positive and negative numbers, including through zero ➢ read Roman numerals to 1000 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 ➢ round any number up to 1,000,000 to the nearest 10, 100, 1000, 10000 or 100000
Addition and Subtraction	➢ add and subtract numbers mentally with increasingly large numbers ➢ 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 ➢ solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why
Multiplication and Division	➢ identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers ➢ multiply and divide numbers mentally drawing upon known facts ➢ know and use the vocabulary of prime numbers, prime factors and composite (non-prime) numbers and establish whether a number up to 100 is prime and recall prime numbers up to 19 ➢ multiply numbers up to 4-digits by a 1-digit or 2-digit number using a formal written method, including long multiplication for 2-digit numbers. ➢ divide numbers up to 4-digits by a 1-digit number using the 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 ➢ solve problems involving multiplication and division using knowledge of factors and multiples, squares and cubes ➢ solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding of the equals sign ➢ recognise and use square numbers and cube numbers, and the notation for squared2 and cubed3 ➢ solve problems involving multiplication and division including scaling by simple fractions and problems involving simple rates
Fractions	➢ identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths ➢ read and write decimal numbers as fractions, e.g. 0.71 = 71/100

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	➢ recognise mixed numbers and improper fractions and convert from one form to the other and write mathematical statements ➢ compare and order fractions whose denominators are all multiples of the same number ➢ 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 ➢ recognise the percent 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.
Measures	➢ measure and calculate the perimeter of composite rectilinear shapes in cm and m ➢ 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 (e.g. using 1 cm3 blocks to build cuboids, including cubes) and capacity (e.g. using water) ➢ convert between different units of metric measure (e.g. km/m; cm/m; cm/mm; g/kg; l/ml) ➢ solve problems involving converting between units of time ➢ understand and use approximate equivalences between metric units and common imperial units such as inches, pounds and pints
Geometry	➢ know angles are measured in degrees ➢ estimate and compare acute, obtuse and reflex angles ➢ identify angles at a point on a straight line and ½ a turn (total 180°); and I identify angles at a point and one whole turn (total 360°); I identify other multiples of 90° ➢ draw given angles, and measure them in degrees ➢ 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 ➢ distinguish between regular and irregular polygons based on reasoning about equal sides 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
Statistics	➢ complete, read and interpret information in: tables, including timetables ➢ solve comparison, addition and difference problems using information presented in a line graph

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A Year 6 Mathematician should be able to:	
Number and Place Value	➢ read, write, order and compare numbers up to 10,000,000 and determine the value of each digit ➢ use negative numbers in context and calculate intervals across zero ➢ round any whole number to the required degree of accuracy ➢ solve number and practical problems that involve all other number and place value objectives
Addition and Subtraction	➢ perform mental calculations, including with mixed operations and large numbers ➢ use knowledge of the order of operations to carry our calculations involving the four operations ➢ use estimation to check answers to calculations and determine, in the context of a problem, levels of accuracy. ➢ use knowledge of the order of operations to carry our calculations involving the four operations ➢ 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
Multiplication and Division	➢ identify common factors, common multiples and prime numbers ➢ perform mental calculations, including with mixed numbers and large numbers ➢ multiply multi-digit numbers up to 4-digits by a 2-digit whole 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, where appropriate, interpreting remainders according to the context ➢ solve multiplication and division multi-step problems in contexts, deciding which operations and methods to use and why
Fractions	➢ compare and order fractions, including fractions ➢ use common factors to simplify fractions; use common multiples to express fractions in the same denomination ➢ recall and use equivalences between simple fractions, decimals and percentages, including different contexts ➢ 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 the simplest form ➢ divide proper fractions by whole numbers ➢ associate a fraction with division to calculate decimal fraction equivalents, for simple fractions

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Measures	➢ calculate, estimate and compare volume of cubes and cuboids using standard units, including 3cm and 3m, and extending to other units such as 3mm and 3km ➢ convert between miles and km ➢ 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 three decimal places ➢ solve problems involving the calculation and conversion of units of measure, using decimal notation to three decimal places where appropriate ➢ recognise when it is possible to use formulae for area and volume of shapes ➢ recognise that shapes with the same areas can have different perimeters and vice versa ➢ calculate the area of parallelograms and triangles
Geometry	➢ compare and classify geometric shapes based on their properties and sizes and find unknown angles in any triangles, quadrilaterals, and regular polygons ➢ draw 2D shapes using given dimensions and angles ➢ 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 ➢ recognise, describe and build simple 3D shapes, including making nets ➢ recognise angles where they meet at a point, are on a straight line, or are vertically opposite, and find missing angles ➢ illustrate and name parts of circles, including radius, diameter and circumference and know that the diameter is twice the radius
Statistics	➢ interpret and construct: pie charts and line graphs and use these to solve problems. ➢ calculate and interpret the mean as an average
Ratio 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 of whole numbers or measures such as 15% of 360 and the use of percentages for comparison
Algebra	➢ express missing number problems algebraically and use simple formulae ➢ find pairs of numbers that satisfy number sentences with two unknowns

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