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Maths Progression Maps

	Mathematics	
Development Matters **N3/4**	• Fast recognition of up to 3 objects, without having to count them individually ('subitising'). • Recite numbers past 5. • Say one number for each item in order: 1,2,3,4,5. • Know that the last number reached when counting a small set of objects tells you how many there are in total ('cardinal principle'). • Show 'finger numbers' up to 5. • Link numerals and amounts: for example, showing the right number of objects to match the numeral, up to 5. • Experiment with their own symbols and marks as well as numerals. • Solve real world mathematical problems with numbers up to 5. • Compare quantities using language: 'more than', 'fewer than'. • Talk about and explore 2D and 3D shapes (for example, circles, rectangles, triangles and cuboids) using informal and mathematical language: 'sides', 'corners'; 'straight', 'flat', 'round'. • Understand position through words alone – for example, "The bag is under the table," – with no pointing.	• Describe a familiar route • Discuss routes and locations, using words like 'in front of' and 'behind'. • Make comparisons between objects relating to size, length, weight and capacity. • Select shapes appropriately: flat surfaces for building, a triangular prism for a roof etc. • Combine shapes to make new ones – an arch, a bigger triangle etc. • Talk about and identifies the patterns around them. For example: stripes on clothes, designs on rugs and wallpaper. Use informal language like 'pointy', 'spotty', 'blobs' etc. • Extend and create ABAB patterns – stick, leaf, stick, leaf. • Notice and correct an error in a repeating pattern. • Begin to describe a sequence of events, real or fictional, using words such as 'first', 'then...'
Development Matters **Reception**	• Count objects, actions and sounds. • Subitise. • Link the number symbol (numeral) with its cardinal number value. • Count beyond ten. • Compare numbers. • Understand the 'one more than/one less than' relationship between consecutive numbers.	• Explore the composition of numbers to 10. • Automatically recall number bonds for numbers 0–10. • Select, rotate and manipulate shapes in order to develop spatial reasoning skills. • Compose and decompose shapes so that children recognise a shape can have other shapes within it, just as numbers can. • Continue, copy and create repeating patterns.

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	• Explore the composition of numbers to 10.	• Compare length, weight and capacity.
ELG	**ELG: Number** Children at the expected level of development will: • Have a deep understanding of number to 10, including the composition of each number; • Subitise (recognise quantities without counting) up to 5; • 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.	**ELG: Numerical Patterns** Children at the expected level of development will: • Verbally count beyond 20, recognising the pattern of the counting system; • Compare quantities up to 10 in different contexts, recognising when one quantity is greater than, less than or the same as the other quantity; • Explore and represent patterns within numbers up to 10, including evens and odds, double facts and how quantities can be distributed equally.

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Maths Progression Maps

	Place Value			
	Counting	Representing Number	Using PV and Comparing	Reasoning and Problem Solving
Y1	Count to and across 100, forwards and backwards, from any given number Count numbers to 100 in numerals; count in multiples of twos fives and tens	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.	Identify one more and one less of a given number	
Y2	Count in steps of 2,3 and 5 from 0 and in tens from any number forwards and backwards	Read and write numbers to 100 in numerals and words. Identify, represent and estimate numbers using different representations including a number line.	Recognise the place value of each digit in a two-digit number Compare and order numbers from 0 to 100	Use place value and number facts to solve problems
Y3	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 to 1000 in numerals and words	Recognise the place value of each digit in a three-digit number Compare and order numbers to 1000	Solve number problems and practical problems involving these ideas.

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Y4	Count in multiples of 6, 7, 9, 25 and 1000 Count backwards through zero including negative numbers	Identify and estimate numbers using different representations Read Roan numerals to 100	Find 1000 more or less than a given number Recognise the place value of each digit in a four-digit number Order and compare numbers beyond 1000	Round any number to the nearest 10,100 or 1000 Solve number problems and practical problems involving all of the above with increasing large positive numbers
Y5	Count forwards or backwards in steps of powers of 10 for any given number Count forwards and backwards with positive and negative numbers including through zero	Read, write, order and compare numbers to 1,000,000 and determine the value of each digit. Read Roman numerals to 1000 and recognise years written in Roman numerals	Order and compare numbers to at least 1,000,000 and determine the value of each digit	Interpret negative numbers in context Round any number to the nearest 10, 100, 1000, 10,000 and 100,000 Solve number and practical problems involving all of the above.
Y6		Read, write, order and compare numbers to 10,000,000 and determine the value of each digit.	Order and compare numbers to at least 10,000,000 and determine the value of each digit	Round any whole number to the required degree of accuracy Use negative numbers in context and calculate intervals across zero Solve number and practical problems involving all of the above.

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Maths Progression Maps

Addition and Subtraction

	Recall, Represent, Use	Calculations	Solve Problems
Y1	Read, write and interpret mathematical statements involving +, - and = signs. Represent and use number bonds and related subtraction facts within 20	Add and subtract one and two digit numbers to 20 including zero	Solve one step problems that involve addition and subtraction using concrete object and pictorial representations and missing number problems
Y2	Recall and use addition and subtraction facts to 20 and derive and use related facts to 100 Show the addition of two numbers can be done in any order and the subtraction of one from another cannot Recognise and use the inverse relationship between addition and subtraction and use this to check calculations	Add and subtract numbers using concrete objects, pictorial representation and mentally, including; • Two digit and one digit • Two digit and tens • Two two-digit • 3 one-digit	Solve problems with addition and subtraction
Y3	Estimate the answer to a calculation and use inverse operations to check an answer	Add and subtract numbers mentally, including; • Three-digit and one digit • Three-digit and tens • Three-digit and hundreds Add and subtract numbers with up to three-digits using column method	Solve problems including missing number problems using number facts, place value and more complex addition and subtraction.

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Maths Progression Maps

Y4	Estimate and use inverse operations to check answers to a calculation	Add and subtract numbers with up to 4 digits using column method	Solve addition and subtraction two step problems in context deciding which operations and methods to use and why
Y5	Use rounding to check answers to calculations and determine levels of accuracy	Add and subtract numbers with more than 4 digits using column method Add and subtract numbers mentally with increasingly large numbers	Solve addition and subtraction multi step problems in context deciding which operations and methods to use and why Solve addition, subtraction, multiplication and division problems in context understanding the meaning of the equals sign
Y6		Preform mental calculations, including with mixed operations and large numbers Use knowledge of order of operations to carry out calculations involving the four operations	Solve addition, subtraction, multiplication and division multi step problems in context deciding which operations and methods to use and why

Multiplication and Division			
Represent, Recall and Represent	Calculation	Problem solving	Mixed operations

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Y1			Solve one step multiplication and division problems with concrete objects, pictorial representations and arrays with the support of a teacher.	
Y2	Recall and use multiplication and division facts for the 2,5 and 10 times tables. Recognise odd and even numbers Show that multiplication of two numbers can be done in any order but multiplication cannot.	Calculate multiplication and division within the timetables they know. Write calculations using x ÷ =	Use arrays, materials and repeated addition to solve multiplication and division problems with multiplication facts they know.	
Y3	Recall and use multiplication and division facts for the 3,4 and 8 times tables.	Calculate multiplication and division within the timetables they know including 2 digits by 1 digit.	Solve problems including missing numbers, scaling and correspondence problems.	
Y4	Recall multiplication and division facts up to 12 x 12 Use place value, known and derived facts to multiply and divide mentally including by 3 numbers Multiply and divide by 0 and 1 Recognise and use factor pairs.	Calculate multiplication and division within the timetables they know including 3 and 2 digits by 1 digit using formal written methods. Calculate multiplication and division within the timetables they know including up to 4	Solve problems involving multiplying and adding, using distributive law, integer scaling and harder correspondence problems.	

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Maths Progression Maps

		digits by 1 and 2 digits using formal written methods. Divide 4 digits by 1 digit using formal written methods interpreting remainders appropriately for the context. Multiple and divide both whole and decimal numbers by 10, 100 and 1000.		
Y5	Identify multiples and factor including finding all factors of a number and common factors of two numbers. Know and use the vocabulary of prime numbers, prime factors and composite numbers. Recall prime numbers up to 19 Recognise and use square and cube numbers.	Use long multiplication to multiple 4 digits by 2 digits. Use formal written methods of long division to divide 4 digits by 2 digits interpreting remainders as whole numbers and fractions Preform mental calculations including with large numbers and mixed calculations.	Use knowledge of factors, multiples, squares and cubes to solve problems. Solve multiplication and division problems by scaling with simple fractions.	Solve problems using the four calculations and show an understanding of the meaning of the equals sign.
Y6	Identify common factors and multiples and prime numbers Use estimation to check answers and determine a degree of accuracy		Solve problems using all for calculations.	Use their knowledge of order of operations to solve calculations using the four operations

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Maths Progression Maps

KS3
• Order, sort and interpret any number (including decimals and negatives). • Use place value to multiply and divide any number by powers of 10. • Understand and apply the concept of multiples, factors and primes individual, pairs or groups of numbers. For example, finding the Lowest Common Multiples of a pair of numbers. • Use formal methods for addition, subtraction, multiplication and division fluently including increasingly complex decimals. • Explore and understand rules for adding and subtracting positive and negative integers. • Multiply and divide negative numbers. • Use and apply BIDMAS to the number system, ensuring the calculations are carried out in order.

	Fractions			
	Read and Represent	Compare	Calculations	Problem Solving
Y1	Understand half is one of two equal parts of an object, shape or quantity.			

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Maths Progression Maps

	Understand a quarter is one of two equal parts of an object, shape or quantity.			
Y2	Find and write 1/3, ¼, 2/4 and ¾ of a shape, quantity and length	Recognise the equivalence of ½ and 2/4.	Write simple fractions eg ½ of 8 =4	
Y3	Count in tenths and understands tenths are derived from dividing an object or number into 10 equal parts. Find fractions of a discrete set of objects including unit and non unit fractions. Recognise and use fractions as numbers including unit and non unit fractions	Recognise and show using diagrams equivalent fractions. Compare and order unit fractions and fractions with the same denominator.	Add and subtract fractions with the same denominator within one whole.	Solve problems using all of the above.
Y4	Count in hundredths and understands tenths are derived from dividing an object or number into 100 equal parts.	Recognise and show using diagrams families of equivalent fractions.	Add and subtract fractions with the same denominator.	Solve problems involving increasingly harder fractions to calculate quantities including non unit fractions where the answer is a whole number.
Y5	Identify, name and write equivalent fractions	Compare and order fractions where the denominator are all multiples of the same number.	Add and subtract fractions with the same denominator and where the	

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	Recognise mixed number and improper fractions and convert from one to the other.		denominators are multiples of the same number. Multiple proper fractions and mixed number fractions by whole numbers.	
Y6		Use common factors to simplify fractions. Use common multiples to express fractions with the same denominator. Compare and order fractions including fractions greater than 1.	Add and subtract fractions with different denominators and mixed numbers using their understanding of equivalent fractions. Multiply pairs if proper fractions writing the answer in its simplest form. Divide proper fractions by a whole number.	

	Decimals			
	Read and Represent	Compare	Calculations	F.D.P
Y4	Recognise and write decimals equivalents of any number of tenths and hundredths Recognise and write decimals equivalents of ¼ ½ and ¾	Round decimals with one decimal place to the nearest whole number Compare numbers with the same number of decimals places	Find the effect of divide 1 or 2 digit numbers by 10 and 100 .	Solve simple measure and money problems involving fractions and decimals to two decimal places.

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Y5	Read and write decimals numbers as fractions Recognise and use thousandths and relate them to tenth and hundredth equivalents.	Round decimals with two decimal place to the nearest whole number and to 1 decimal place. Compare, and order numbers up to three decimal places	Solve problems using numbers up to 3 decimals places.	Recognise % and understand percent relates to the number of parts per hundred. Write percentages as a fraction with a denominator of 100 and as a decimal Solve problems which involve knowing percentages and decimal equivalents.
Y6	Identify the value of each digit in numbers given to three decimal places.		Multiply and divide by 10, 100 and 1000 up to 3 decimal places Multiply one digit numbers with up to 2 decimal places by whole numbers. Use written division methods where the answer has up to 2 decimal places Solve problems where the answers need to be rounded to a specified degree of accuracy	Associate a fraction with division and calculate decimal fraction equivalents Recall and use equivalences between fractions, decimals and percentages in different context.

KS3
• Round any number to any specified degree of accuracy, including decimals and measures. • Understand the concept of percentages and use this to find percentages of a quantity. • Compare the result of two percentage calculations. For example 15% of 40 and 10% of 50. • Understand the interrelated nature of fractions, decimals and percentages, converting between them and ordering with increasing fluency. • Add, subtract and multiply fractions fluently

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Maths Progression Maps

	Measurement			
	Using Measures	Money	Time	Perimeter, Area and Volume
Y1	Compare, describe and solve practical problems for: length and height, mass and weight, capacity and volume and time.	Recognise and know different denominations of coins and notes.	Sequence events in chronological order using language such as before and next. Use language relating to dates Tell the time to the hour and half past the hour by drawing hands on a clock	

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Maths Progression Maps

Y2	Choose and use appropriate standard units to estimate and measure. Use rulers, scales and vessels accurately Compare and order length, mass and volume	Recognise and use the symbols for pounds and pence. Find different combinations of coins to equal a set amount. Solve simple problems in a practical context.	Compare and sequence intervals of time. Tell and write the time in 5 minute intervals Know the number of minutes in an hour and the number of hours in a day.	
Y3	Measure, compare and calculate lengths (m/cm/mm), mass (kg,g) and volume and capacity (l/ml)	Add and subtract amounts of money to give change.	Tell and write the time from an analogue clock including ones with Roman numerals. Estimate and read time with increasing accuracy to the nearest minute. Use vocabulary to describe am and pm No the number of seconds in a minute and days in each month Compare durations of events.	Measure the perimeter of a simple 2D shape
Y4	Convert between units of measure. Estimate, compare and calculate different measures	Estimate, compare and calculate different measures.	Read, write and convert time between analogue and digital 12 and 24hr clocks. Solve problems involving converting from hours to minutes; minutes to hours; years to months and weeks to days	Measure and calculate the perimeter of a rectilinear shape. Find the are of a rectilinear shape by counting squares

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Maths Progression Maps

Y5	Convert between different units of metric measure. Understand and use approximate equivalences between metric and imperial units. Use all four operations to solve problems involving measures including with decimals and scaling	Use all four operations to solve problems involving measure (including money)	Solve problems involving converting between units of time.	Measure and calculate the perimeter of a composite rectilinear shape in cm and m Calculate and compare the area of rectangles and estimate the area of irregular shapes Estimate volume and capacity
Y6	Use all four operations to solve problems involving measures and conversions. Use, read and write between standard units and using this to convert upto 3DP Convert between miles and km		Use, read, write and convert between standard units including converting measurements of time from a smaller unit to a larger unit.	Recognise shapes with the same area can have different perimeters and visa versa Recognise when it is possible to use formulae to find area and volume. Calculate the area of parallelograms and triangles. Calculate, estimate and compare the volume of cubes and cuboids.

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Maths Progression Maps

	Measurement			
	2D	3D	Angles	Position and direction
Y1	Recognise and name common 2D shapes	Recognise and name common 3D shapes		Describe position, direction and movements including whole, half and quarter turns
Y2	Identify and describe the properties of 2D shapes. Identify 2D shapes on the surface of 3D shapes Compare and sort common 2D shapes on everyday objects	Recognise and name common 3D shapes Compare and sort common 3D shapes and everyday objects		Order and arrange combinations of objects in patterns and sequences Use mathematical language to describe position, direction and movement

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Maths Progression Maps

Y3	Draw 2D shapes	Make 3D shapes using modelling materials Recognise 3D shapes in different orientations	Recognise angles as properties of a shape or description of a turn. Identify right angles and recognise 2 make a half turn, 3 make a three quarter turn and 4 a complete turn Identify horizontal and vertical lines and pairs of parallel and perpendicular lines	
Y4	Compare and classify geometric shapes based on their properties and sizes Identify lines of symmetry in 2D shapes.		Identify, compare and order acute and obtuse angles Identify lines of symmetry in 2D shapes	Use coordinates to describe positions on 2D grid in the first quadrant. Describe the movements between positions as translations Plot specified points to complete a given polygon
Y5	Distinguish between regular and irregular polygons based on equal sides and angles Use the properties of rectangles to deduce related facts and find missing lengths	Identify 3D shapes from 2D representations	Know angles can be measured in degrees. Estimate and compare acute, obtuse and reflex angles Draw given angles and measure them in degrees	Identify, describe and represent the position of a shape following reflection or translation and know that the shape has not changed.

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			Identify angles at a point, on a straight line and other multiples of 90 degrees	
Y6	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 and know the diameter is twice the radius.	Recognise, describe and build simple 3D shapes including making nets	Find unknown angles in triangles, quadrilaterals and regular polygons Recognise angles where they meet at a point are on a straight line or are vertical opposite and find missing angles	Describe positions on all 4 quadrants. Draw and translate simple shapes on the coordinate plane and reflect then in the axis

KS3
Use the properties and vocabulary of 3D shapes and their nets to solve problems. Calculate the area and perimeter of a variety of 2D and compound shapes, including triangles using a formula. Represent 3D shapes in 2D. Work with shapes on a 4 quadrant grid to translate, reflect and rotate in any direction or plane. Use a ruler and a protractor to draw accurately. Recognise, describe and name all common 2D shapes and apply angle facts to solve a variety of problems. Understand and use place value when using different measures of length, mass, time and volume changing freely between different units of metric measures.

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Maths Progression Maps

	Statistics	
	Present and Interpret	Solve Problems
Y1		
Y2	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 catergory Ask and answer questions about totalling and comparing categorical data.
Y3	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 tables

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Maths Progression Maps

Y4	Interpret and present discreet and continuous data using appropriate graphics methods	Solve comparison, sum and difference problems using information presented in bar charts, pictogram and tables
Y5	Complete, read and interpret information in tables and timetables	Solve comparison, sum and difference problems using information presented in line graphs
Y6	Interpret and construct pie charts and line graphs and use these to solve problems	Calculate and interpret mean as an average

KS3
Create, use and interpret a variety of different tables and graphs to observe and analyse statistical information including; stem and leaf diagrams, vertical line charts and pie charts. Use the mode, median, mean and range fluently to compare, describe and analyse groups of data.

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Additional Units taught in Year 6	
Algebra Use simple formulae Generate and describe linear number sequences Express missing numbers algebraically Find pairs of numbers that satisfy and equations with two unknowns Enumerate possibilities of combinations of two variables	**Ratio** Solve problems involving the relative sizes of two quantities Solve problems involving the calculation of percentages and use percentages for comparison Solve problems using 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
KS3	**KS3**
Use and interpret algebraic notation including ab (a x b) 3y (3 x y), substituting numerical values into formula to find the value of an equation. - Combine variables within an equation or expression and simplify by collecting like terms. - Recognise and use the relationships between operations and use inverse to change the subject of a formula. - Use and interpret bracket notation with algebraic equations, multiplying out a single bracket. - Plot a linear function on a graph from an equation and interpret mathematically. - Understand linear sequences and finding a formula to solve the next and nth terms.	Understand and use ratio notation, including reducing it to its simplest form. - Understand a relationship between two quantities and use this information to solve problems involving direct proportion.

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KS3 Probability
Record, describe and analyse the frequency of outcomes of simple probability experiments; understanding that the sum of all possible outcomes equals 1.

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