Curriculum Progression

Subject: Mathematics

Number			
Number and Place Value	**Addition and Subtraction**	**Multiplication and Division**	**Fractions**
- Develop 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'.	- doubling - lots of	- halving - sharing

Measurement	Geometry	
- Make comparisons between objects relating to size, length, weight and capacity.	**Properties of Shape**	**Position and Direction**
	- 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'. - 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.	- 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'. - Talk about and identify 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...'

Nursery

Number			
Number and Place Value	**Addition and Subtraction**	**Multiplication and Division**	**Fractions**
- 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 0–5 and some to 10.	- doubling - lots of	- halving - sharing

Measurement	Geometry	
	Properties of Shape	**Position and Direction**
- Compare length, weight and capacity.	- Select, rotate and manipulate shapes 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.

Reception

Number

Number and Place Value	Addition and Subtraction	Multiplication and Division	Fractions
- count to and across 100, forwards and backwards, beginning with 0 or 1, or from any given number - count, read and write numbers to 100 in numerals; count in multiples of 2s, 5s and 10s - given a number, identify 1 more and 1 less - identify and represent numbers using objects and pictorial representations including the number line, and use the language of: equal to, more than, less than (fewer), most, least - read and write numbers from 1 to 20 in numerals and words	- read, write and interpret mathematical statements involving addition (+), subtraction (−) and equals (=) signs - represent and use number bonds and related subtraction facts within 20 - add and subtract one-digit and two-digit numbers to 20, including 0 - solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as 7 = ? − 9	- solve one-step problems involving multiplication and division, by calculating the answer using concrete objects, pictorial representations and arrays with the f the teacher	- recognise, find and name a half as 1 of 2 equal parts of an object, shape or quantity - recognise, find and name a quarter as 1 of 4 equal parts of an object, shape or quantity

Measurement	Geometry	
	Properties of Shape	Position and Direction

- compare, describe and solve practical problems for:
 	
  • lengths and heights [for example, long/short, longer/shorter, tall/short, double/half]
  • mass/weight [for example, heavy/light, heavier than, lighter than]
  • capacity and volume [for example, full/empty, more than, less than, half, half full, quarter]
  • time [for example, quicker, slower, earlier, later]
 	
- measure and begin to record the following:
 	
  • lengths and heights
  • mass/weight
  • capacity and volume
  • time (hours, minutes, seconds)
  • recognise and know the value of different denominations of coins and notes
  • 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 the time to the hour and half past the hour and draw the hands on a clock face to show these times
	- recognise and name common 2-D and 3-D shapes, including:
	
	  • 2-D shapes [for example, rectangles (including squares), circles and triangles]
	  • 3-D shapes [for example, cuboids (including cubes), pyramids and spheres]
		- describe position, direction and movement, including whole, half, quarter and three-quarter turns

Year 1

	Number			
	Number and Place Value	**Addition and Subtraction**	**Multiplication and Division**	**Fractions**

Year 2	- count in steps of 2, 3, and 5 from 0, and in 10s from any number, forward and backward
	
	- recognise the place value of each digit in a two-digit number (10s, 1s)
	
	- identify, represent and estimate numbers using different representations, including the number line
	
	- compare and order numbers from 0 up to 100; use <, > and = signs
	
	- read and write numbers to at least 100 in numerals and in words
	
	- use place value and number facts to solve problems
		- solve problems with addition and subtraction:
		  • using concrete objects and pictorial representations, including those involving numbers, quantities and measures
		  • applying their increasing knowledge of mental and written methods
		- recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100
		- add and subtract numbers using concrete objects, pictorial representations, and mentally, including:
		  • a two-digit number and 1s
		  • a two-digit number and 10s
		  • 2 two-digit numbers
		  • adding 3 one-digit numbers
		- show that addition of 2 numbers can be done in any order (commutative) and subtraction of 1 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
			- recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers
			- calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication (×), division (÷) and equals (=) signs
			- show that multiplication of 2 numbers can be done in any order (commutative) and division of 1 number by another cannot
			- solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts
				- recognise, find, name and write fractions $\frac{1}{3}$, $\frac{1}{4}$, $\frac{2}{4}$, $\frac{3}{4}$ of a length, shape, set of objects or quantity
				- write simple fractions, for example $\frac{1}{2}$ of 6 = 3 and recognise the equivalence of $\frac{2}{4}$ and $\frac{1}{2}$

Measurement		**Geometry**		**Statistics**
		Properties of Shape	**Position and Direction**	
- 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 = - recognise and use symbols for pounds (£) and pence (p); combine amounts to make a particular value - recognise and use symbols for pounds (£) and pence (p); 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, - including giving change - compare and sequence intervals of time - 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		- identify and describe the properties of 2-D shapes, including the number of sides, and line symmetry in a vertical line - identify and describe the properties of 3-D shapes, including the number of edges, vertices and faces - identify 2-D shapes on the surface of 3-D shapes, [for example, a circle on a cylinder and a triangle on a pyramid] - compare and sort common 2-D and 3-D shapes and everyday objects	- 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)	- interpret and construct simple pictograms, tally charts, block diagrams and tables - ask and answer simple questions by counting the number of objects in each category and sorting the categories by quantity - ask and answer questions about totalling and comparing categorical data

Number

Number and Place Value	Addition and Subtraction	Multiplication and Division	Fractions

- count from 0 in multiples of 4, 8, 50 and 100; find 10 or 100 more or less than a given number
 	
- recognise the place value of each digit in a 3-digit number (100s, 10s, 1s)
 	
- compare and order numbers up to 1,000
 	
- identify, represent and estimate numbers using different representations
 	
- read and write numbers up to 1,000 in numerals and in words
 	
- solve number problems and practical problems involving these ideas
	- add and subtract numbers mentally, including:
	  • a three-digit number and 1s
	  • a three-digit number and 10s
	  • a three-digit number and 100s
	- 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 inverse operations to check answers
	- solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction
		- recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables
		- 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
		- 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
			- 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, using diagrams, equivalent fractions with small denominators
			- add and subtract fractions with the same denominator within one whole [for example, $\frac{5}{7} + \frac{1}{7} = \frac{6}{7}$]
			- compare and order unit fractions, and fractions with the same denominators
			- solve problems that involve all of the above

Measurement	Geometry – Properties of Shape	Statistics
- measure, compare, add and subtract: lengths (m/cm/mm); mass (kg/g); volume/capacity (l/ml) - measure the perimeter of simple 2-D shapes - add and subtract amounts of money to give change, using both £ and p in practical contexts - tell and write the time from an analogue clock, including using Roman numerals from I to XII, and 12-hour and 24-hour clocks - estimate and read time with increasing accuracy to the nearest minute; record and compare time in terms of seconds, minutes and hours; use vocabulary such as o'clock, am/pm, morning, afternoon, noon and midnight - know the number of seconds in a minute and the number of days in each month, year and leap year - compare durations of events [for example, to calculate the time taken by particular events or tasks]	- draw 2-D shapes and make 3-D shapes using modelling materials; recognise 3-D shapes in different orientations and describe them - recognise angles as a property of shape or a description of a turn - identify right angles, recognise that 2 right angles make a half-turn, 3 make three-quarters of a turn and 4 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	- interpret and present data using bar charts, pictograms and tables - solve one-step and two-step questions [for example 'How many more?' and 'How many fewer?'] using information presented in scaled bar charts and pictograms and tables

Year 3

Number

Number and Place Value	Addition and Subtraction	Multiplication and Division	Fractions (including decimals)
- count in multiples of 6, 7, 9, 25 and 1,000 - find 1,000 more or less than a given number - count backwards through 0 to include negative numbers - recognise the place value of each digit in a four-digit number (1,000s, 100s, 10s, and 1s) - order and compare numbers beyond 1,000 - identify, represent and estimate numbers using different representations - round any number to the nearest 10, 100 or 1,000 - solve number and practical problems that involve all of the above and with increasingly large positive numbers - read Roman numerals to 100 (I to C) and know that over time, the numeral system changed to include the concept of 0 and place value	- 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	- recall multiplication and division facts for multiplication tables up to 12 × 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 - multiply two-digit and three-digit numbers by a one-digit number using formal written layout - solve problems involving multiplying and adding, including using the distributive law to multiply two-digit numbers by 1 digit, integer scaling problems and harder correspondence problems such as n objects are connected to m objects	- recognise and show, using diagrams, families of common equivalent fractions - count up and down in hundredths; recognise that hundredths arise when dividing an object by 100 and dividing tenths by 10 - solve problems involving increasingly harder fractions to calculate quantities, and fractions to divide quantities, including non-unit fractions where the answer is a whole number - add and subtract fractions with the same denominator - recognise and write decimal equivalents of any number of tenths or hundreds - recognise and write decimal equivalents to $\frac{1}{4}$, $\frac{1}{2}$, $\frac{3}{4}$ - find the effect of dividing a one- or two-digit number by 10 and 100, identifying the value of the digits in the answer as ones, tenths and hundredths - round decimals with 1 decimal place to the nearest whole number - compare numbers with the same number of decimal places up to 2 decimal places - solve simple measure and money problems involving fractions and decimals to 2 decimal places

Measurement	Geometry – Properties of Shape		Statistics
	Properties of Shape	Position and Direction	
- convert between different units of measure [for example, kilometre to metre; hour to minute] - measure and calculate the perimeter of a rectilinear figure (including squares) in centimetres and metres - find the area of rectilinear shapes by counting squares - estimate, compare and calculate different measures, including money in pounds and pence - 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	- compare and classify geometric shapes, including quadrilaterals and triangles, based on their properties and sizes - identify acute and obtuse angles and compare and order angles up to 2 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	- 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	- 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

Year 4

Number

Number and Place Value	Addition and Subtraction	Multiplication and Division	Fractions (including decimals and percentages)
- read, write, order and compare numbers to at least 1,000,000 and determine the value of each digit - count forwards or backwards in steps of powers of 10 for any given number up to 1,000,000 - interpret negative numbers in context, count forwards and backwards with positive and negative whole numbers, including through 0 - round any number up to 1,000,000 to the nearest 10, 100, 1,000, 10,000 and 100,000 - solve number problems and practical problems that involve all of the above - read Roman numerals to 1,000 (M) and recognise years written in Roman numerals	- 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 - 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	- identify multiples and factors, including finding all factor pairs of a number, and common factors of 2 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 - 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 for the context - multiply and divide whole numbers and those involving decimals by 10, 100 and 1,000 - recognise and use square numbers and cube numbers, and the notation for squared (^{2}) and cubed (^{3}) - solve problems involving multiplication and division, including using their knowledge of factors and multiples, squares and cubes - solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign - solve problems involving multiplication and division, including scaling by simple fractions and problems involving simple rates	- compare and order fractions whose denominators are all multiples of the same number - identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths - recognise mixed numbers and improper fractions and convert from one form to the other and write mathematical statements > 1 as a mixed number [for example, $\frac{2}{5} + \frac{4}{5} = \frac{6}{5} = 1\frac{1}{5}$] - 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 - read and write decimal numbers as fractions [for example, $0.71 = \frac{71}{100}$] - recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents - round decimals with 2 decimal places to the nearest whole number and to 1 decimal place - read, write, order and compare numbers with up to 3 decimal places - solve problems involving number up to 3 decimal places - recognise the per cent symbol (%) and understand that per cent relates to 'number of parts per 100', and write percentages as a fraction with denominator 100, and as a decimal fraction - solve problems which require knowing percentage and decimal equivalents of $\frac{1}{2}, \frac{1}{4}, \frac{1}{5}, \frac{2}{5}, \frac{4}{5}$ and those fractions with a denominator of a multiple of 10 or 25

Measurement	Geometry		Statistics
	Properties of Shape	**Position and Direction**	

- convert between different units of metric measure [for example, kilometre and metre; centimetre and metre; centimetre and millimetre; gram and kilogram; litre and millilitre]
- understand and use approximate equivalences between metric units and common imperial units such as inches, pounds and pints
- measure and calculate the perimeter of composite rectilinear shapes in centimetres and metres
- calculate and compare the area of rectangles (including squares), including using standard units, square centimetres (cm²) and square metres (m²), and estimate the area of irregular shapes
- estimate volume [for example, using 1 cm³ blocks to build cuboids (including cubes)] and capacity [for example, using water]
- solve problems involving converting between units of time
- use all four operations to solve problems involving measure [for example, length, mass, volume, money] using decimal notation, including scaling
	- identify 3-D shapes, including cubes and other cuboids, from 2-D representations
	- know angles are measured in degrees: estimate and compare acute, obtuse and reflex angles
	- draw given angles, and measure them in degrees (°)
	- identify:
	  • angles at a point and 1 whole turn (total 360°)
	  • angles at a point on a straight line and half a turn (total 180°)
	  • other multiples of 90°
	  • use the properties of rectangles to deduce related facts and find missing lengths and angles
	  • distinguish between regular and irregular polygons based on reasoning about equal sides and angles
		- identify, 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	- solve comparison, sum and difference problems using information presented in a line graph
			- complete, read and interpret information in tables, including timetables

Year 5

Number

Number and Place Value	Addition, Subtraction, Multiplication and Division	Fractions (including decimals and percentages)
- 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 0 - solve number and practical problems that involve all of the above	- 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 - identify common factors, common multiples and prime numbers - use their knowledge of the order of operations to carry out calculations involving the 4 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 - use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy	- use common factors to simplify fractions; use common multiples to express fractions in the same denomination - compare and order fractions, including fractions >1 - add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions - multiply simple pairs of proper fractions, writing the answer in its simplest form [for example, $\frac{1}{4} \times \frac{1}{2} = \frac{1}{8}$] - divide proper fractions by whole numbers [for example, $\frac{1}{3} \div 2 = \frac{1}{6}$] - associate a fraction with division and calculate decimal fraction equivalents [for example, 0.375] for a simple fraction [for example, $\frac{3}{8}$] - identify the value of each digit in numbers given to 3 decimal places and multiply and divide numbers by 10, 100 and 1,000 giving answers up to 3 decimal places - multiply one-digit numbers with up to 2 decimal places by whole numbers - use written division methods in cases where the answer has up to 2 decimal places - solve problems which require answers to be rounded to specified degrees of accuracy - recall and use equivalences between simple fractions, decimals and percentages, including in different contexts

Measurement	Geometry		Statistics
	Properties of Shape	Position and Direction	

- convert between different units of metric measure [for example, kilometre and metre; centimetre and metre; centimetre and millimetre; gram and kilogram; litre and millilitre]
- understand and use approximate equivalences between metric units and common imperial units such as inches, pounds and pints
- measure and calculate the perimeter of composite rectilinear shapes in centimetres and metres
- calculate and compare the area of rectangles (including squares), including using standard units, square centimetres (cm²) and square metres (m²), and estimate the area of irregular shapes
- estimate volume [for example, using 1 cm³ blocks to build cuboids (including cubes)] and capacity [for example, using water]
- solve problems involving converting between units of time
- use all four operations to solve problems involving measure [for example, length, mass, volume, money] using decimal notation, including scaling
	- identify 3-D shapes, including cubes and other cuboids, from 2-D representations
	- know angles are measured in degrees: estimate and compare acute, obtuse and reflex angles
	- draw given angles, and measure them in degrees (°)
	- identify:
	  • angles at a point and 1 whole turn (total 360°)
	  • angles at a point on a straight line and half a turn (total 180°)
	  • other multiples of 90°
	  • use the properties of rectangles to deduce related facts and find missing lengths and angles
	  • distinguish between regular and irregular polygons based on reasoning about equal sides and angles
		- identify, 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	- solve comparison, sum and difference problems using information presented in a line graph
			- complete, read and interpret information in tables, including timetables

Year 6