

# MATHEMATICS - WHOLE SCHOOL PROGRESSION MAP

The progression maps are structured using the strand headings as they appear in the National Curriculum:

- Number – Number and Place Value
- Number – Addition and Subtraction
- Number – Multiplication and Division
- Number- Fractions (including decimals and percentages)
- Ratio and Proportion
- Measurement
- Geometry – properties of shapes
- Geometry – position and direction
- Statistics
- Algebra

Each of the above categories has been divided into sub categories to illustrate progression in key areas.

All programmes of study statements are included and some appear twice; this is indicated in the text where:

- The statement has central relevance to more than one sub category within a topic;
- The statement has central relevance to more than one mathematics topic.

This is done to reflect the aims of the curriculum that ***pupils should make rich connections across mathematical ideas to develop fluency, mathematical reasoning and competence in solving increasingly sophisticated problems*** (Mathematics programmes of study: key stages 1 and 2 page 3). The connections

made are not intended to be exhaustive; teachers should seek to support pupils in making other connections where appropriate (see medium-term plans).

Number: Number and Place Value COUNTING							
Nursery	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
number songs and rhymes with counting  1:1 correspondence for amounts to 5	xhant rhymes involving numbers  1:1 correspondence to 10 in different arrays	count to and across 100, forwards and backwards, beginning with 0 or 1, or from any given number			count backwards through zero to include negative numbers	interpret negative numbers in context, count forwards and backwards with positive and negative whole numbers, including through zero	use negative numbers in context, and calculate intervals across zero
count to 10	know that anything can be counted  count from 0 forwards to 20 and beyond recognising the pattern of the counting system (backwards from 20)	count, read and write numbers to 100 in numerals; count in multiples of twos, fives and tens	count in steps of 2, 3, and 5 from 0, and in tens from any number, forward or backward	count from 0 in multiples of 4, 8, 50 and 100;	count in multiples of 6, 7, 9, 25 and 1000	count forwards or backwards in steps of powers of 10 for any given number up to 1 000 000	
begin to recognise that each counting number is more than the one before.	1 more and 1 less to 10	given a number, identify one more and one less (to 100)		find 10 or 100 more or less than a given number	find 1000 more or less than a given number		
know the number which comes next in a sequence of numbers to 5							
Number: Number and Place Value COMPARING NUMBERS							
know when a group has more than another  begin to explore quantities using the language of more or less	Understand that zero means nothing	use the language of: equal to, more than, less than (fewer), most, least	compare and order numbers from 0 up to 100; use <, > and = signs	compare and order numbers up to 1 000	order and compare numbers beyond 1 000	read, write, order and compare numbers to at least 1 000 000 and determine the value of each digit (appears also in Reading and Writing Numbers)	read, write, order and compare numbers up to 10 000 000 and determine the value of each digit (appears also in Reading and Writing Numbers)

order numbers to 5 recognise numbers out of sequence	recognise and name numbers 0 to 10 – when not in order  compare and order a variety of quantities up to 10  use vocabulary more, most, less than etc. up to 10				<i>compare numbers with the same number of decimal places up to two decimal places (copied from Fractions)</i>		
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**Number: Number and Place Value**  
**IDENTIFYING, REPRESENTING AND ESTIMATING NUMBERS**

-have an awareness of numbers in the environment  -begin to represent numbers using marks/fingers  -show finger numbers to 5  -begin to develop the -skill of subitising	-subitise to 5 (begin to 10)  -show fingers up correctly for each number to 10  -become more confident with the part whole model for numbers to 10	identify and represent numbers using objects and pictorial representations including the number line	identify, represent and estimate numbers using different representations, including the number line	identify, represent and estimate numbers using different representations	identify, represent and estimate numbers using different representations		
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**Number: Number and Place Value**  
**READING AND WRITING NUMBERS (including Roman Numerals)**

Ten Town to aid formation to 10	match numeral to quantity to 10	read and write numbers from 1 to 20 in numerals and words.	read and write numbers to at least 100 in numerals and in words	read and write numbers up to 1 000 in numerals and in words		read, write, order and compare numbers to at least 1 000 000 and determine the value of each digit (appears also in Comparing Numbers)	read, write, order and compare numbers up to 10 000 000 and determine the value of each digit (appears also in Understanding Place Value)
say one number name for each item	recognise and read numbers to 10 including when not in order with aids			<i>tell and write the time from an analogue clock, including using Roman numerals from I to XII, and</i>			

				<i>12-hour and 24-hour clocks</i> (copied from Measurement)	the concept of zero and place value.		
<b>Number: Number and Place Value</b>							
<b>UNDERSTANDING PLACE VALUE</b>							
	deep understanding of the composition of numbers to 10		recognise the place value of each digit in a two-digit number (tens, ones)	recognise the place value of each digit in a three-digit number (hundreds, tens, ones)	recognise the place value of each digit in a four-digit number (thousands, hundreds, tens, and ones)	read, write, order and compare numbers to at least 1 000 000 and determine the value of each digit (appears also in Reading and Writing Numbers)	read, write, order and compare numbers up to 10 000 000 and determine the value of each digit (appears also in Reading and Writing Numbers)
					<i>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 units, tenths and hundredths</i> (copied from Fractions)	<i>recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents</i> (copied from Fractions)	<i>identify the value of each digit to three decimal places and multiply and divide numbers by 10, 100 and 1000 where the answers are up to three decimal places</i> (copied from Fractions)
<b>Number: Number and Place Value</b>							
<b>ROUNDING</b>							
					round any number to the nearest 10, 100 or 1 000	round any number up to 1 000 000 to the nearest 10, 100, 1 000, 10 000 and 100 000	round any whole number to a required degree of accuracy
					<i>round decimals with one decimal place to the nearest whole number</i> (copied from Fractions)	<i>round decimals with two decimal places to the nearest whole number and to one decimal place</i> (copied from Fractions)	<i>solve problems which require answers to be rounded to specified degrees of accuracy</i> (copied from Fractions)
<b>Number: Number and Place Value</b>							
<b>PROBLEM SOLVING</b>							

			use place value and number facts to solve problems	solve number problems and practical problems involving these ideas.	solve number and practical problems that involve all of the above and with increasingly large positive numbers	solve number problems and practical problems that involve all of the above	solve number and practical problems that involve all of the above
<b>Number: Addition and Subtraction NUMBER BONDS</b>							
Nursery	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
	recall number bonds to 5 / begin recall to 10	represent and use number bonds and related subtraction facts within 20	recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100				
<b>Number: Addition and Subtraction MENTAL CALCULATION</b>							
	calculate addition bonds and subtraction facts to/within 10 using apparatus and/or number line if needed	add and subtract one-digit and two-digit numbers to 20, including zero	add and subtract numbers using concrete objects, pictorial representations, and mentally, including: a two-digit number and ones * a two-digit number and tens * two two-digit numbers * adding three one-digit numbers	add and subtract numbers mentally, including: * a three-digit number and ones * a three-digit number and tens * a three-digit number and hundreds		add and subtract numbers mentally with increasingly large numbers	perform mental calculations, including with mixed operations and large numbers
	addition and subtraction facts to 10	read, write and interpret mathematical statements involving addition (+), subtraction (-) and equals (=) signs	show that addition of two numbers can be done in any order (commutative) and subtraction of one number from				use their knowledge of the order of operations to carry out calculations involving the four operations

		(appears also in Written Methods)	another cannot				
<b>Number: Addition and Subtraction WRITTEN METHODS</b>							
		read, write and interpret mathematical statements involving addition (+), subtraction (-) and equals (=) signs (appears also in Mental Calculation)		add and subtract numbers with up to three digits, using formal written methods of columnar addition and subtraction	add and subtract numbers with up to 4 digits using the formal written methods of columnar addition and subtraction where appropriate	add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction)	
<b>Number: Addition and Subtraction INVERSE OPERATIONS, ESTIMATING AND CHECKING ANSWERS</b>							
	know that addition and subtraction are related	recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems.	estimate the answer to a calculation and use inverse operations to check answers	estimate and use inverse operations to check answers to a calculation	use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy	use estimation to check answers to calculations and determine, in the context of a problem, levels of accuracy.	recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems.
<b>Number: Addition and Subtraction PROBLEM SOLVING</b>							
		solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as $7 = \square - 9$	solve problems with addition and subtraction: * using concrete objects and pictorial representations, including those involving numbers, quantities and measures	solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction	solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why	solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why	solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why

			* applying their increasing knowledge of mental and written methods				
			<i>solve simple problems in a practical context involving addition and subtraction of money of the same unit, including giving change</i> (copied from Measurement)				Solve problems involving addition, subtraction, multiplication and division

**Number: Multiplication and Division  
MULTIPLICATION & DIVISION FACTS**

Nursery	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
	doubles to 5 and half of numbers 2,4,6,8,10	<i>count in multiples of twos, fives and tens</i> (copied from Number and Place Value)	<i>count in steps of 2, 3, and 5 from 0, and in tens from any number, forward or backward</i> (copied from Number and Place Value)	<i>count from 0 in multiples of 4, 8, 50 and 100</i> (copied from Number and Place Value)	<i>count in multiples of 6, 7, 9, 25 and 1000</i> (copied from Number and Place Value)	<i>count forwards or backwards in steps of powers of 10 for any given number up to 1 000 000</i> (copied from Number and Place Value)	
	recognise odd and even numbers to 10		recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers	recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables	recall multiplication and division facts for multiplication tables up to $12 \times 12$		

**Number: Multiplication and Division  
MENTAL CALCULATIONS**

			write and calculate mathematical statements for multiplication and	use place value, known and derived facts to multiply and divide	multiply and divide numbers mentally drawing upon known facts	perform mental calculations, including with mixed operations and large numbers	
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			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 (appears also in Written Methods)	mentally, including: multiplying by 0 and 1; dividing by 1; multiplying together three numbers			
		show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot		recognise and use factor pairs and commutativity in mental calculations (appears also in Properties of Numbers)	multiply and divide whole numbers and those involving decimals by 10, 100 and 1000	<i>associate a fraction with division and calculate decimal fraction equivalents (e.g. 0.375) for a simple fraction (e.g. <math>\frac{3}{8}</math>)</i> (copied from Fractions)	show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot
<b>Number: Multiplication and Division WRITTEN CALCULATIONS</b>							
			calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication ( $\times$ ), division ( $\div$ ) and equals (=) signs	write and calculate mathematical statements for multiplication and division using the multiplication tables that they know, including for two-digit numbers times one-digit numbers, using mental and progressing to formal written methods (appears also in Mental Methods)	multiply two-digit and three-digit numbers by a one-digit number using formal written layout	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 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 one-digit	divide numbers up to 4-digits by a two-digit



						number using the formal written method of short division and interpret remainders appropriately for the context	whole number using the formal written method of short division where appropriate for the context 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
							<i>use written division methods in cases where the answer has up to two decimal places (copied from Fractions (including decimals))</i>
<b>Number: Multiplication and Division</b>							
<b>PROPERTIES OF NUMBERS: MULTIPLES, FACTORS, PRIMES, SQUARE AND CUBE NUMBERS</b>							
					recognise and use factor pairs and commutativity in mental calculations (repeated)	identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers.	identify common factors, common multiples and prime numbers
						know and use the vocabulary of prime numbers, prime factors and composite (non-prime) numbers	<i>use common factors to simplify fractions; use common multiples to express fractions in the same denomination (copied from Fractions)</i>
						establish whether a number up to 100 is prime and recall prime numbers up to 19	
						recognise and use	<i>calculate, estimate</i>

						square numbers and cube numbers, and the notation for squared ( <sup>2</sup> ) and cubed ( <sup>3</sup> )	<i>and compare volume of cubes and cuboids using standard units, including centimetre cubed (cm<sup>3</sup>) and cubic metres (m<sup>3</sup>), and extending to other units such as mm<sup>3</sup> and km<sup>3</sup> (copied from Measures)</i>
<b>Number: Multiplication and Division ORDER OF OPERATIONS</b>							
							use their knowledge of the order of operations to carry out calculations involving the four operations
<b>Number: Multiplication and Division INVERSE OPERATIONS, ESTIMATING AND CHECKING ANSWERS</b>							
				<i>estimate the answer to a calculation and use inverse operations to check answers (copied from Addition and Subtraction)</i>	<i>estimate and use inverse operations to check answers to a calculation (copied from Addition and Subtraction)</i>		use estimation to check answers to calculations and determine, in the context of a problem, levels of accuracy
<b>Number: Multiplication and Division PROBLEM SOLVING</b>							
		solve one-step problems involving multiplication and division, by calculating the answer using concrete objects, pictorial representations and arrays with the	solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems	solve problems, including missing number problems, involving multiplication and division, including positive integer scaling problems and correspondence	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 such as n	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
						solve problems involving addition, subtraction, multiplication and division and a	

		support of the teacher	in contexts	problems in which n objects are connected to m objects	objects are connected to m objects	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	<i>solve problems involving similar shapes where the scale factor is known or can be found (copied from Ratio and Proportion)</i>

**Number: Fractions (including Decimals and Percentages)**

**COUNTING IN FRACTIONAL STEPS**

Nursery	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
			<i>Pupils should count in fractions up to 10, starting from any number and using the 1/2 and 2/4 equivalence on the number line (Non Statutory Guidance)</i>	count up and down in tenths	count up and down in hundredths		

**Number: Fractions (including Decimals and Percentages)**

**RECOGNISING FRACTIONS**

	half of numbers 2,4,6,8,10	recognise, find and name a half as one of two equal parts of an object, shape or quantity	recognise, find, name and write fractions $\frac{1}{3}$ , $\frac{1}{4}$ , $\frac{2}{4}$ and $\frac{3}{4}$ of a length, shape, set of objects or quantity	recognise, find and write fractions of a discrete set of objects: unit fractions and non-unit fractions with small denominators	recognise that hundredths arise when dividing an object by one hundred and dividing tenths by ten	recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents (appears also in Equivalence)	
		recognise, find and name a quarter as one of four equal parts of an object, shape or quantity		recognise that tenths arise from dividing an object into 10 equal parts and in dividing one – digit numbers or quantities by 10.			
				recognise and use fractions as			

				numbers: unit fractions and non-unit fractions with small denominators			
<b>Number: Fractions (including Decimals and Percentages)</b>							
<b>COMPARING FRACTIONS</b>							
				compare and order unit fractions, and fractions with the same denominators		compare and order fractions whose denominators are all multiples of the same number	compare and order fractions, including fractions >1
<b>Number: Fractions (including Decimals and Percentages)</b>							
<b>COMPARING DECIMALS</b>							
					compare numbers with the same number of decimal places up to two decimal places	read, write, order and compare numbers with up to three decimal places	identify the value of each digit in numbers given to three decimal places
<b>Number: Fractions (including Decimals and Percentages)</b>							
<b>ROUNDING INCLUDING DECIMALS</b>							
					round decimals with one decimal place to the nearest whole number	round decimals with two decimal places to the nearest whole number and to one decimal place	solve problems which require answers to be rounded to specified degrees of accuracy
<b>Number: Fractions (including Decimals and Percentages)</b>							
<b>EQUIVALENCE (INCLUDING FRACTIONS, DECIMALS AND PERCENTAGES)</b>							
			write simple fractions e.g. $\frac{1}{2}$ of $6 = 3$ and recognise the equivalence of $\frac{2}{4}$ and $\frac{1}{2}$ .	recognise and show, using diagrams, equivalent fractions with small denominators	recognise and show, using diagrams, families of common equivalent fractions	identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths	use common factors to simplify fractions; use common multiples to express fractions in the same denomination
					recognise and write	read and write decimal	associate a fraction

					decimal equivalents of any number of tenths or hundredths	numbers as fractions (e.g. $0.71 = \frac{71}{100}$ )	with division and calculate decimal fraction equivalents (e.g. 0.375) for a simple fraction (e.g. $\frac{3}{8}$ )
						recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents	
					recognise and write decimal equivalents to $\frac{1}{4}$ ; $\frac{1}{2}$ ; $\frac{3}{4}$	recognise the per cent symbol (%) and understand that per cent relates to “number of parts per hundred”, and write percentages as a fraction with denominator 100 as a decimal fraction	recall and use equivalences between simple fractions, decimals and percentages, including in different contexts.
<b>Number: Fractions (including Decimals and Percentages)</b>							
<b>ADDITION AND SUBTRACTION OF FRACTIONS</b>							
				add and subtract fractions with the same denominator within one whole (e.g. $\frac{5}{7} + \frac{1}{7} = \frac{6}{7}$ )	add and subtract fractions with the same denominator	add and subtract fractions with the same denominator and multiples of the same number	add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions
						recognise mixed numbers and improper fractions and convert from one form to the other and write mathematical statements $> 1$ as a mixed number (e.g. $\frac{2}{5} + \frac{4}{5} = \frac{6}{5} = 1\frac{1}{5}$ )	
<b>Number: Fractions (including Decimals and Percentages)</b>							
<b>MULTIPLICATION AND DIVISION OF FRACTIONS</b>							
						multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams	multiply simple pairs of proper fractions, writing the answer in its simplest form (e.g. $\frac{1}{4} \times \frac{1}{2} = \frac{1}{8}$ )



							where the answer has up to two decimal places
<b>Number: Fractions (including Decimals and Percentages)</b>							
<b>PROBLEM SOLVING</b>							
				solve problems that involve all of the above	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	solve problems involving numbers up to three decimal places	
					solve simple measure and money problems involving fractions and decimals to two decimal places.	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 with a denominator of a multiple of 10 or 25.	

Ratio and Proportion							
Statements only appear in Year 6 but should be connected to previous learning, particularly fractions and multiplication and division							
Nursery	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
							solve problems involving the relative sizes of two quantities where missing values can be found by using integer multiplication and division facts
							solve problems involving the calculation of percentages [for example, of

							measures, and such as 15% of 360] and the use of percentages for comparison
							solve problems involving similar shapes where the scale factor is known or can be found
							solve problems involving unequal sharing and grouping using knowledge of fractions and multiples.

**Measurement  
COMPARING AND ESTIMATING**

Nursery	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
begin to compare quantities of objects	compare size, mass and capacity and become familiar with measuring equipment	compare, describe and solve practical problems for: * lengths and heights [e.g. long/short, longer/shorter, tall/short, double/half] * mass/weight [e.g. heavy/light, heavier than, lighter than] * capacity and volume [e.g. full/empty, more than, less than, half, half full, quarter] * time [e.g. quicker, slower, earlier, later]	compare and order lengths, mass, volume/capacity and record the results using >, < and =		estimate, compare and calculate different measures, including money in pounds and pence (also included in Measuring)	calculate and compare the area of squares and rectangles including using standard units, square centimetres (cm <sup>2</sup> ) and square metres (m <sup>2</sup> ) and estimate the area of irregular shapes (also included in measuring)  estimate volume (e.g. using 1 cm <sup>3</sup> blocks to build cubes and cuboids) and capacity (e.g. using water)	calculate, estimate and compare volume of cubes and cuboids using standard units, including centimetre cubed (cm <sup>3</sup> ) and cubic metres (m <sup>3</sup> ), and extending to other units such as mm <sup>3</sup> and km <sup>3</sup> .
recalls a sequence of events in everyday life and stories	order and sequence events using everyday language related to time	sequence events in chronological order using language [e.g. before and after, next,	compare and sequence intervals of time	compare durations of events, for example to calculate the time			



		first, today, yesterday, tomorrow, morning, afternoon and evening]		taken by particular events or tasks			
				estimate and read time with increasing accuracy to the nearest minute; record and compare time in terms of seconds, minutes, hours and o'clock; use vocabulary such as a.m./p.m., morning, afternoon, noon and midnight (appears also in Telling the Time)			

**Measurement**  
**MEASURING and CALCULATING**

in meaningful contexts, use language related to quantities, height/length, mass/weight and capacity/volume	become familiar with measuring tools in everyday experiences and play	measure and begin to record the following: * <b>lengths and heights</b> * <b>mass/weight</b> * <b>capacity and volume</b> * <b>time</b> (hours, minutes, seconds)	choose and use appropriate standard units to estimate and measure <b>length/height</b> in any direction (m/cm); <b>mass</b> (kg/g); <b>temperature</b> (°C); <b>capacity</b> (litres/ml) to the nearest appropriate unit, using rulers, scales, thermometers and measuring vessels	measure, compare, add and subtract: <b>lengths</b> (m/cm/mm); <b>mass</b> (kg/g); <b>volume/capacity</b> (l/ml)	estimate, compare and calculate <b>different measures</b> , including <b>money in pounds and pence</b> (appears also in Comparing)	use all four operations to solve problems involving measure (e.g. <b>length, mass, volume, money</b> ) using decimal notation including scaling.	solve problems involving the calculation and conversion of <b>units of measure</b> , using decimal notation up to three decimal places where appropriate (appears also in Converting)
	Explore problems involving prediction and discussion of			measure the <b>perimeter</b> of simple 2-D shapes	measure and calculate the <b>perimeter</b> of a	measure and calculate the <b>perimeter</b> of composite rectilinear	recognise that shapes with the same areas can have different

	comparisons of length				rectilinear figure (including squares) in centimetres and metres	shapes in centimetres and metres	<b>perimeters</b> and vice versa
	begin to recognise coins (smaller denominations) and use in practical contexts as a process of ‘buying’ something – simple money calculations	recognise and know the value of different denominations of <b>coins and notes</b>	recognise and use symbols for pounds ( <b>£</b> ) and pence ( <b>p</b> ); combine amounts to make a particular value find different combinations of coins that equal the same amounts of money <b>solve simple problems</b> in a practical context involving addition and subtraction of money of the same unit, including giving change	add and subtract amounts of <b>money</b> to give change, using both £ and p in practical contexts			
					find the area of rectilinear shapes by counting squares	calculate and compare the area of squares and rectangles including using standard units, square centimetres (cm <sup>2</sup> ) and square metres (m <sup>2</sup> ) and estimate the area of irregular shapes  <i>recognise and use square numbers and cube numbers, and the notation for squared (²) and cubed (³)</i> (copied from Multiplication and	calculate the area of parallelograms and triangles calculate, estimate and compare volume of cubes and cuboids using standard units, including cubic centimetres (cm <sup>3</sup> ) and cubic metres (m <sup>3</sup> ), and extending to other units [e.g. mm <sup>3</sup> and km <sup>3</sup> ]. recognise when it is possible to use formulae for area and volume of shapes

						Division)	
<b>Measurement TELLING THE TIME</b>							
		tell the time to the hour and half past the hour and draw the hands on a clock face to show these times.	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.	tell and write the time from an analogue clock, including using Roman numerals from I to XII, and 12-hour and 24-hour clocks	read, write and convert time between analogue and digital 12 and 24-hour clocks (appears also in Converting)		
		recognise and use language relating to dates, including days of the week, weeks, months and years	know the number of minutes in an hour and the number of hours in a day. (appears also in Converting)	estimate and read time with increasing accuracy to the nearest minute; record and compare time in terms of seconds, minutes, hours and o'clock; use vocabulary such as a.m./p.m., morning, afternoon, noon and midnight (appears also in Comparing and Estimating)			
					solve problems involving converting from hours to minutes; minutes to seconds; years to months; weeks to days (appears also in Converting)	solve problems involving converting between units of time	
<b>Measurement CONVERTING</b>							
			know the number	know the number	convert between	convert between	use, read, write and

			of minutes in an hour and the number of hours in a day. (appears also in Telling the Time)	of seconds in a minute and the number of days in each month, year and leap year	different units of measure (e.g. kilometre to metre; hour to minute)	different units of metric measure (e.g. kilometre and metre; centimetre and metre; centimetre and millimetre; gram and kilogram; litre and millilitre)	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 three decimal places
					read, write and convert time between analogue and digital 12 and 24-hour clocks (appears also in Converting)	solve problems involving converting between units of time	solve problems involving the calculation and conversion of units of measure, using decimal notation up to three decimal places where appropriate (appears also in Measuring and Calculating)
					solve problems involving converting from hours to minutes; minutes to seconds; years to months; weeks to days (appears also in Telling the Time)	understand and use equivalences between metric units and common imperial units such as inches, pounds and pints	convert between miles and kilometres

Geometry: Properties of Shapes							
IDENTIFYING SHAPES AND THEIR PROPERTIES							
Nursery	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
begin to talk about shapes and recognise them in the environment use shape names	begin to recognise 2D and 3D shapes – use informal language, as well as mathematical terms, to describe shapes.	recognise and name common 2-D and 3-D shapes, including: * 2-D shapes [e.g. rectangles (including squares),	identify and describe the properties of 2-D shapes, including the number of sides and line		identify lines of symmetry in 2-D shapes presented in different orientations	identify 3-D shapes, including cubes and other cuboids, from 2-D representations	recognise, describe and build simple 3-D shapes, including making nets (appears also in Drawing and

accurately – circle, triangle and square		circles and triangles] * 3-D shapes [e.g. cuboids (including cubes), pyramids and spheres].	symmetry in a vertical line				Constructing)
			identify and describe the properties of 3-D shapes, including the number of edges, vertices and faces				illustrate and name parts of circles, including radius, diameter and circumference and know that the diameter is twice the radius
			identify 2-D shapes on the surface of 3-D shapes, [for example, a circle on a cylinder and a triangle on a pyramid]				

**Geometry: Properties of Shapes  
DRAWING AND CONSTRUCTING**

make arrangements with objects during play  partition and combine shapes to make new shapes with 2D and 3D shapes.				draw 2-D shapes and make 3-D shapes using modelling materials; recognise 3-D shapes in different orientations and describe them	complete a simple symmetric figure with respect to a specific line of symmetry	draw given angles, and measure them in degrees (°)	draw 2-D shapes using given dimensions and angles
							recognise, describe and build simple 3-D shapes, including making nets (appears also in Identifying Shapes and Their Properties)

**Geometry: Properties of Shapes  
COMPARING AND CLASSIFYING**

show awareness of shape similarities and differences between objects			compare and sort common 2-D and 3-D shapes and everyday objects		compare and classify geometric shapes, including quadrilaterals and triangles, based on their properties and sizes	use the properties of rectangles to deduce related facts and find missing lengths and angles	compare and classify geometric shapes based on their properties and sizes and find unknown angles in any triangles, quadrilaterals, and regular polygons
						distinguish between regular and irregular polygons based on reasoning about equal sides and angles	

				recognise angles as a property of shape or a description of a turn		know angles are measured in degrees: estimate and compare acute, obtuse and reflex angles	
				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 acute and obtuse angles and compare and order angles up to two right angles by size	identify: * angles at a point and one whole turn (total $360^\circ$ ) * angles at a point on a straight line and $\frac{1}{2}$ a turn (total $180^\circ$ ) * other multiples of $90^\circ$	recognise angles where they meet at a point, are on a straight line, or are vertically opposite, and find missing angles

**Geometry: Position and Direction**  
**POSITION, DIRECTION AND MOVEMENT**

Nursery	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
begin to understand positional language.	Use spatial and positional language, including following and giving directions, using relative terms	describe position, direction and movement, including half, quarter and three-quarter turns.	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)		describe positions on a 2-D grid as coordinates in the first quadrant	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	describe positions on the full coordinate grid (all four quadrants)
					describe movements between positions as translations of a given unit to the left/right and up/down		draw and translate simple shapes on the coordinate plane, and reflect them in the axes.
					plot specified points and draw sides to		

					complete a given polygon		
<b>Geometry: Position and Direction</b> <b>PATTERNS</b>							
exploring and adding simple linear patterns of two or three repeating items. -look for and have awareness of patterns and relationships within the environment.			order and arrange combinations of mathematical objects in patterns and sequences				
<b>Statistics</b> <b>INTERPRETING, CONSTRUCTING AND PRESENTING DATA</b>							
<b>Nursery</b>	<b>Reception</b>	<b>Year 1</b>	<b>Year 2</b>	<b>Year 3</b>	<b>Year 4</b>	<b>Year 5</b>	<b>Year 6</b>
			interpret and construct simple pictograms, tally charts, block diagrams and simple tables	interpret and present data using bar charts, pictograms and tables	interpret and present discrete and continuous data using appropriate graphical methods, including bar charts and time graphs	complete, read and interpret information in tables, including timetables	interpret and construct pie charts and line graphs and use these to solve problems
			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				
<b>Statistics</b> <b>SOLVING PROBLEMS</b>							
				solve one-step and	solve comparison,	solve comparison, sum	calculate and interpret

				two-step questions [e.g. 'How many more?' and 'How many fewer?'] using information presented in scaled bar charts and pictograms and tables.	sum and difference problems using information presented in bar charts, pictograms, tables and other graphs.	and difference problems using information presented in a line graph	the mean as an average
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Algebra EQUATIONS							
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Nursery	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
		solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and <b>missing number problems</b> such as $7 = \square - 9$ (copied from Addition and Subtraction)	recognise and use the inverse relationship between addition and subtraction and use this to check calculations and <b>missing number</b> problems. (copied from Addition and Subtraction)	<p>solve problems, including <b>missing number</b> problems, using number facts, place value, and more complex addition and subtraction. (copied from Addition and Subtraction)</p> <p>solve problems, including <b>missing number</b> problems, involving multiplication and division, including integer scaling (copied from Multiplication and Division)</p>		use the properties of rectangles to deduce related facts and find <b>missing lengths and angles</b> (copied from Geometry: Properties of Shapes)	express missing number problems algebraically
							find pairs of numbers that satisfy number sentences involving two unknowns
							enumerate all possibilities of combinations of two variables



<b>Algebra FORMULAE</b>							
					Perimeter can be expressed algebraically as $2(a + b)$ where a and b are the dimensions in the same unit. (Copied from NSG measurement)		use simple formulae recognise when it is possible to use <b>formulae</b> for area and volume of shapes (copied from Measurement)
<b>Algebra SEQUENCES</b>							
	order and sequence events using everyday language related to time – copied from Measurement	sequence events in chronological order using language such as: before and after, next, first, today, yesterday, tomorrow, morning, afternoon and evening (copied from Measurement)	compare and sequence intervals of time (copied from Measurement) order and arrange combinations of mathematical objects in patterns (copied from Geometry: position and direction)				generate and describe linear number sequences

# Mathematics Whole School Progression Map