



# WOOORE PRIMARY & NURSERY SCHOOL

## Mathematics Progression Map

## Number and Place Value

### Counting

Birth to 3	Reception	EYFS ELG	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Counting-like behaviour, such as making sounds, pointing or saying some numbers in sequence.	Count objects, actions and sounds.  Subitise.  Count beyond 10.	Have a deep understanding of number to 10, including composition of each number.  Subitise (recognise quantities without counting) up to 5.	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 numbers, including through zero.	Use negative numbers in context, and calculate intervals across zero.
Count in everyday contexts, sometimes skipping numbers - '1-2-3-5.	Link the number symbol (numeral) with its cardinal number value.  Understand the 'one more than/one less than' relationship between consecutive numbers.	Verbally count beyond 20, recognising the pattern of the counting system.	Count, read and write numbers to 100 in numerals.	Read and write numbers to at least 100 in numerals and in words.	Read and write numbers up to 1000 in numerals and words.	Count in multiples of 6,7,9, 25 and 1000. Plus counting in steps of 12.	Count forwards or backwards in steps of powers of 10 from any given number up to 1,000,000.	
Take part in finger rhymes with numbers.			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. Plus counting in steps of 6 and 11.			

React to changes of amount in a group of up to three items.	Explore the composition of number bonds to 10.	Explore and represent patterns within numbers up to 10, including evens and odds, double facts and how quantities can be distributed equally.	Given a number, identify one more and one less.		Find 10 or 100 more or less than a given number.	Find 1000 more or less than a given number.		
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Comparing Numbers

Compare amounts, saying 'lots', 'more' or 'same'.	Compare numbers.	Compare quantities up to 10 in different contexts, recognising when one quantity is greater than, less than or the same as the other quantity	Use the language of: equal to, more than, less than (fewer), most, least.	Compare and order numbers from 0 up to 100; use the $<$ , $>$ and $=$ signs.	Compare and order numbers up to 1000.	Order and compare numbers beyond 1000.	Read, write, order and compare numbers to at least 1,000,000 and determine the value of each digit.	Read, write, order and compare numbers up to 10,000,000 and determine the value of each digit.
Compare sizes, weights etc. using gesture and language - 'bigger/little/smaller', 'high/low', 'tall', 'heavy'.	Compare length, weight and capacity.					Compare numbers with the same number of decimal places up to two decimal places.		

Identifying, representing and estimating numbers.

			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.		
Reading and Writing Numbers (including Roman Numerals)								
			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 1000 in numerals and words.		Read, write, order and compare numbers to at least 1,000,000 and determine the value of each digit.	Read, write, order and compare numbers up to 10,000,000 and determine the value of each digit.
			Read and write numbers to 100 in numerals.		Tell and write the time from an analogue clock, including Roman Numerals from I to X!! and 12-hour and 24-hour clocks.	Read Roman Numerals to 100 (I to C) and know that over time, the numeral system changed to include the concept of zero and place value.		
Understanding Place Value								
				Recognise the place value of each digit in a two-digit number.	Recognise the place value of each digit in a three-digit number.	Recognise the place value of each digit in a four-digit number	Read, write, order and compare numbers to at least 1,000,000	Read, write, order and compare numbers up to 10,000,000 and

							and determine the value of each digit.	determine the value of each digit.
						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.	Recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents.	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.
Rounding								
						Round any number to the nearest 10, 100 or 1000.	Round any number up to 1,000,000 to the nearest 10, 100, 1000, 10,000, and 100,000.	Round any whole number to a required degree of accuracy.
						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.
Problem Solving								
				Use place value and number	Solve number problems and	Solve number and practical	Solve number problems and	Solve number and practical

				facts to solve problems/	practical problems involving these ideas.	problems that involve all of the above with increasingly large positive numbers.	practical problems that involve all of the above.	problems that involve all of the above.
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## Number: Addition and Subtraction

Birth to 3	Reception	EYFS ELG	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
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### Number Bonds

	Automatically recall number bonds for numbers 0-10.	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	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.				
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### Mental Calculation

			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:	Add and subtract numbers mentally including: <ul style="list-style-type: none"> <li>a three-digit number and ones</li> </ul>		Add and subtract numbers mentally with increasingly large numbers.	Perform mental calculations, including with mixed operations and large numbers.
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				<ul style="list-style-type: none"> <li>• a two-digit number and ones</li> <li>• a two-digit number and tens</li> <li>• two two-digit numbers</li> <li>• adding three one-digit numbers</li> </ul>	<ul style="list-style-type: none"> <li>• a three-digit number and tens</li> <li>• a three-digit number and hundreds</li> </ul>			
			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 another cannot.				Use their knowledge of the order of operations to carry out calculations involving the four operations.
Written Methods								
			Read, write and interpret mathematical statements involving addition +,		Add and subtract numbers with up to three digits, using formal written methods	Add and subtract numbers with up to 4 digits using the formal written methods	Add and subtract whole numbers with more than 4 digits, including using formal	

			subtraction - and equals = signs.		of columnar addition and subtraction.	of columnar addition and subtraction where appropriate.	written methods (columnar addition and subtraction).	
Inverse Operations, Estimating and Checking Answers								
				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
Problem Solving								
			Solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as $7 = ? - 9$	Solve problems with addition and subtraction: <ul style="list-style-type: none"> <li>using concrete objects and pictorial representations, including those involving numbers,</li> </ul>	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.



				quantities and measures <ul style="list-style-type: none"> <li>• apply their increasing knowledge of mental and written methods.</li> </ul>				
				Solve simple problems in a practical context involving addition and subtraction of money of the same unit, including giving change.				Solve problems involving addition, subtraction, multiplication and division.

### **Number: Multiplication and Division**

Birth to 3	Reception	EYFS ELG	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
			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. Plus counting in steps of 6 and 11.	Count in multiples of 7, 11, 12, 25 and 1000.	Count forwards or backwards in steps of powers of 10 from any given number up to 1,000,000.	

				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 for <u>2,4,8 and 3,6,9 times tables</u>	Recall and use multiplication and division facts for the <u>11 and 12 times tables</u> Recall multiplication and division facts for multiplication tables <u>up to 12 x 12.</u>		
Mental Calculation								
					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	Use place value, known and derived facts to multiply and divide mentally, including: multiplying by 0 and 1; dividing by 1; multiplying together three numbers	Multiply and divide numbers mentally drawing upon known facts	Perform mental calculations, including with mixed operations and large numbers

				<p>Show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot.</p>		<p>Recognise and use factor pairs and commutativity in mental calculations.</p>	<p>Multiply and divide whole numbers and those involving decimals by 10, 100 and 1000.</p>	<p>Associate a fraction with division and calculate decimal fraction equivalents.</p>
Written Calculation								
				<p>Calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication, division and equals signs.</p>	<p>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</p>	<p>Multiply two-digit and three-digit numbers by a one-digit number using formal written layout</p>	<p>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</p>	<p>Multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication</p>
							<p>Divide numbers up to 4 digits by a one-digit number using</p>	<p>Divide numbers up to 4-digits by a two-digit whole number using the</p>

							the formal written method of short division and interpret remainders appropriately for the context	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
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Properties of numbers: Multiples, Factors, Primes, Square and Cube Numbers

						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	<i>Use common factors to simplify fractions; use common multiples to</i>

							numbers, prime factors and composite (nonprime) numbers	<i>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 square numbers and cube numbers, and the notation for squared ( 2 ) and cubed ( 3 )	<i>Calculate, estimate and compare volume of cubes and cuboids using standard units, including centimetre cubed (cm 3 ) and cubic metres (m 3 ), and extending to other units such as mm 3 and km 3</i>
								Use their knowledge of the order of operations to carry out calculations

								involving the four operations
					<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
Problem Solving								
			Solve one-step problems involving multiplication and division, by calculating the answer using concrete objects, pictorial representations and arrays with the support of the teacher	Solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts	Solve problems, including missing number problems, involving multiplication and division, including positive integer scaling problems and correspondence problems in which n objects are connected to m objects	Solve problems involving multiplying and adding, including using the distributive law to multiply two digit numbers by one digit, integer scaling problems and harder correspondence problems such as n objects are connected to m objects	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 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)**

Birth to 3	Reception	EYFS ELG	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
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Counting in Fractional Steps

				<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.		
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Recognising Fractions

			Recognise, find and name a half as one of two equal parts of an object, shape or quantity	Recognise, find, name and write fractions $1/3$ , $1/4$ , $2/4$ and $3/4$ 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			
Comparing Fractions								
					Compare and order unit fractions, and fractions with		Compare and order fractions whose denominators are all multiples	Compare and order fractions, including fractions $>1$



					the same denominators		of the same number	
Comparing Decimals								
						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
Rounding including decimals								
						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
Equivalence (including fractions, decimals and percentages)								
				Write simple fractions e.g. $1/2$ of $6 = 3$ and recognise the equivalence of $2/4$ and $1/2$ .	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 decimal equivalents of any number of tenths or hundredths	Read and write decimal numbers as fractions (e.g. $0.71 = 71 / 100$ )	Associate a fraction with division and calculate decimal fraction equivalents (e.g. $0.375$ ) for a simple fraction (e.g. $3 / 8$ )
							Recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents	
						Recognise and write decimal equivalents to $1 / 4 ; 1 / 2 ; 3 / 4$	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
Addition and Subtraction of Fractions								
						Add and subtract fractions with the same denominator	Add and subtract fractions with the same denominator	Add and subtract fractions with the same denominator and
								Add and subtract fractions with different denominators

					within one whole (e.g. $5/7 + 1/7 = 6/7$ )		<p>multiples of the same number</p> <p>and mixed numbers, using the concept of equivalent fractions</p>
							<p>Recognise mixed numbers and improper fractions and convert from one form to the other and write mathematical statements <math>&gt;1</math> as a mixed number (e.g. <math>2/5 + 4/5 = 6/5 = 1 1/5</math>)</p>

**Multiplication and Division of Fractions**

							<p>Multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams</p>	<p>Multiply simple pairs of proper fractions, writing the answer in its simplest form (e.g. <math>1/4 \times 1/2 = 1/8</math>)</p>
								<p>Multiply one-digit numbers with up to two decimal places by whole numbers</p>

								Divide proper fractions by whole numbers (e.g. $1/3 \div 2 = 1/6$ )
Multiplication and Division of Decimals								
								Multiply one-digit numbers with up to two decimal places by whole numbers
						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		Multiply and divide numbers by 10, 100 and 1000 where the answers are up to three decimal places
								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
								Associate a fraction with division and calculate decimal fraction equivalents (e.g. 0.375) for a simple fraction (e.g. $\frac{3}{8}$ )
								Use written division methods in cases where the answer has up to two decimal places
Problem Solving								
					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.	
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### Ratio and Proportion

Birth to 3	Reception	EYFS ELG	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**

Birth to 3	Reception	EYFS ELG	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Comparing and Estimating								

		Children use everyday language to compare quantities and objects	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	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	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>
							Estimate volume (e.g. using 1 cm <sup>3</sup> blocks to build cubes and cuboids) and capacity (e.g. using water)	
			Sequence events in chronological order using language [e.g. before and after, next, first, today, yesterday, tomorrow,	Compare and sequence intervals of time	Compare durations of events, for example to calculate the time taken by particular events or tasks			



			morning, afternoon and evening]					
					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			

**Measuring and Calculating**

	Children use everyday language to talk about size, weight, capacity, position, distance, time and money	Measure and begin to record the following: <ul style="list-style-type: none"> <li>• <b>lengths and heights</b></li> <li>• <b>mass/weight</b></li> <li>• <b>capacity and volume</b></li> </ul>	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	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
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			<ul style="list-style-type: none"> <li><b>time</b> (hours, minutes, seconds)</li> </ul>	the nearest appropriate unit, using rulers, scales, thermometers and measuring vessels				(appears also in Converting)
					Measure the <b>perimeter</b> of simple 2-D shapes	Measure and calculate the <b>perimeter</b> of a rectilinear figure (including squares) in centimetres and metres	Measure and calculate the <b>perimeter</b> of composite rectilinear shapes in centimetres and metres	Recognise that shapes with the same areas can have different <b>perimeters</b> and vice versa
			Recognise and know the value of different denominations of <b>coins and notes</b>	Recognise and use symbols for <b>pounds (£) and pence (p)</b> ; combine amounts to make a particular value	Add and subtract amounts of <b>money</b> to give change, using both £ and p in practical contexts			
				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				
						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 recognise and use square numbers and cube numbers, and the notation for squared ( 2 ) and cubed ( 3 )	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						
Telling the Time								
			Tell the time to the hour and half past the	Tell and write the time to five minutes,	Tell and write the time from an analogue clock,	Read, write and convert time between		

			hour and draw the hands on a clock face to show these times	including quarter past/to the hour and draw the hands on a clock face to show these times.	including using Roman numerals from I to XII, and 12-hour and 24-hour clocks	analogue and digital 12 and 24-hour clocks		
			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	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			
						Solve problems involving converting from hours to minutes; minutes to seconds; years to months; weeks to days	Solve problems involving converting between units of time	

Converting

				Know the number of minutes in an hour and the number of hours in a day	Know the number of seconds in a minute and the number of days in each month, year and leap year	Convert between different units of measure (e.g. kilometre to metre; hour to minute)	Convert between different units of metric measure (e.g. kilometre and metre; centimetre and metre; centimetre and millimetre; gram and kilogram; litre and millilitre)	Use, read, write and convert between standard units, converting measurements of length, mass, volume and time from a smaller unit of measure to a larger unit, and vice versa, using decimal notation to up to three decimal places
						Read, write and convert time between analogue and digital 12 and 24-hour clocks	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
						Solve problems involving converting from hours to minutes; minutes	Understand and use equivalences between metric units and common imperial	Convert between miles and kilometres

							to seconds; years to months; weeks to days	units such as inches, pounds and pints	
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## Geometry: Properties of Shape

Birth to 3	Reception	EYFS ELG	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
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### Identifying shapes and their properties

<p>Climb and squeezing selves into different types of spaces</p>	<p>Select, rotate and manipulate shapes in order to develop spatial reasoning skills.</p> <p>Compose and decompose shapes so that children recognise a shape can have other shapes within it, just as numbers can.</p> <p>Continue, copy and create repeating patterns.</p>	<p>Children explore the characteristics of everyday objects and shapes and use mathematic language to describe them</p>	<p>Recognise and name common 2-D and 3-D shapes, including:</p> <ul style="list-style-type: none"> <li>• 2-D shapes e.g. rectangles including squares, circles and triangles</li> <li>• 3-D shapes e.g. cuboids including cubes, pyramids</li> </ul>	<p>Identify and describe the properties of 2-D shapes including the number of sides and line of symmetry in a vertical line</p> <p>Identify and describe the properties of 3-D shapes, including the number of edges, vertices and faces</p>		<p>Identify lines of symmetry in 2-D shapes presented in different orientations</p>	<p>Identify 3-D shapes, including cubes and other cuboids from 2-D representations</p>	<p>Recognise, describe and build simple 3-D shapes including making nets</p>
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Notice patterns and arrange things in patterns.  Complete inset puzzles			and spheres	Identify 2-D shapes on the surface of 3-D shapes				Illustrate and name parts of circles, including radius, diameter and circumferences and know that the diameter is twice the radius
<b>Drawing and Constructing</b>								
Combine objects like stacking blocks and cups. Put objects inside others and take them out again  Build with a range of resources.					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 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
<b>Comparing and Classifying</b>								
				Compare and sort common 2-D and 3-D shapes and everyday objects		Compare and classify geometric shapes, including quadrilaterals and triangles,	Use 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

						based on their properties and sizes	Distinguish between regular and irregular polygons based on reasoning about equal sides and angles	find unknown angles in triangles, quadrilaterals and regular polygons
<i>Angles</i>								
					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: <ul style="list-style-type: none"> <li>angles at a point and one whole turn (total 360 o )</li> <li>angles at a point on a straight line and <math>\frac{1}{2}</math> a turn (total 180 o )</li> </ul>	Recognise angles where they meet at a point, are on a straight line, or are vertically opposite, and find missing angles



							<ul style="list-style-type: none"> <li>• other multiples of 90</li> </ul>	
					Identify horizontal and vertical lines and pairs of perpendicular and parallel lines			

**Geometry: Position and Direction**

Birth to 3	Reception	EYFS ELG	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
			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		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.

				and anti-clockwise)				
						Plot specified points and draw sides to complete a given polygon		

Pattern

		Children recognise, create and describe patterns		Order and arrange combinations of mathematical objects in patterns and sequences				
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**Statistics**

Birth to 3	Reception	EYFS ELG	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Interpreting, Constructing and Presenting Data								
				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,	Complete, read and interpret information in tables, including time tables	Interpret and construct pie charts and line graphs and use these to solve problems

						including bar charts and time graphs		
				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				
Solving Problems								
					Solve one-step and twostep questions [e.g. 'How many more?' and 'How many fewer?'] using information presented in scaled bar charts and pictograms and tables	Solve comparison, sum and difference problems using information presented in bar charts, pictograms, tables and other graphs	Solve comparison, sum and difference problems using information presented in a line graph	Calculate and interpret the mean as an average

## Algebra

Birth to 3	Reception	EYFS ELG	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 missing number problems such as $7 = * - 9$	Recognise and use the inverse relationship between addition and subtraction and use this to check calculations and missing number problems	Solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction.		Use the properties of rectangles to deduce related facts and find missing lengths and angles	Express missing number problems algebraically
					Solve problems, including missing number problems, involving multiplication and division, including integer scaling			
				Recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100				Find pairs of numbers that satisfy number sentences involving two unknowns
			Represent and use number bonds and					Enumerate all possibilities of

			related subtraction facts within 20					combinations of two variables
Formulae								
						Perimeter can be expressed algebraically as $2(a + b)$ where a and b are the dimensions in the same unit		Use simple formulae
								Recognise when it is possible to use formulae for area and volume of shapes
Sequences								
			Sequence events in chronological order using language such as: before and after, next, first, today, yesterday, tomorrow, morning, afternoon and evening	Compare and sequence intervals of time				Generate and describe linear number sequences
				Order and arrange combinations of mathematical objects in patterns				

**Progression in Addition Bonds**

Adding 1

Bonds to 10

Adding 10

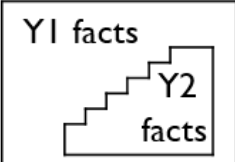
Bridging/  
compensating

Adding 2

Adding 0

Doubles

Near doubles



+	0	1	2	3	4	5	6	7	8	9	10
0	0+0	0+1	0+2	0+3	0+4	0+5	0+6	0+7	0+8	0+9	0+10
1	1+0	1+1	1+2	1+3	1+4	1+5	1+6	1+7	1+8	1+9	1+10
2	2+0	2+1	2+2	2+3	2+4	2+5	2+6	2+7	2+8	2+9	2+10
3	3+0	3+1	3+2	3+3	3+4	3+5	3+6	3+7	3+8	3+9	3+10
4	4+0	4+1	4+2	4+3	4+4	4+5	4+6	4+7	4+8	4+9	4+10
5	5+0	5+1	5+2	5+3	5+4	5+5	5+6	5+7	5+8	5+9	5+10
6	6+0	6+1	6+2	6+3	6+4	6+5	6+6	6+7	6+8	6+9	6+10
7	7+0	7+1	7+2	7+3	7+4	7+5	7+6	7+7	7+8	7+9	7+10
8	8+0	8+1	8+2	8+3	8+4	8+5	8+6	8+7	8+8	8+9	8+10
9	9+0	9+1	9+2	9+3	9+4	9+5	9+6	9+7	9+8	9+9	9+10
10	10+0	10+1	10+2	10+3	10+4	10+5	10+6	10+7	10+8	10+9	10+10