

National Curriculum 2014: Progression in Mathematics

	Year 1	Year 2	Year 3	Year 4
Number and place value	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> 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 different multiples including ones, twos, fives and tens given a number, identify one more and one less identify and represent numbers using concrete 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 1 to 20 in numerals and words 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> count in steps of 2, 3, and 5 from 0, and count in tens from any number, forward or backward recognise the value of each digit in a two digit number (tens, ones) identify, represent and estimate numbers using different representation, 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 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> count from 0 in multiples of 4, 8, 50 and 100; finding 10 or 100 more than a given number recognise the place value of each digit in a three-digit number (hundreds, tens, ones) compare and order numbers up to 1000 identify, represent and estimate numbers using different representations read and write numbers to at least 1000 in numerals and in words solve number problems and practical problems involving these ideas 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> count in multiples of 6, 7, 9, 25 and 100 find 1000 more or less than a given number count backwards through zero to include negative numbers recognise the place value of each digit in a four-digit number (thousands, hundreds, tens and ones) order and compare numbers beyond 1000 identify, represent and estimate numbers using different representations round any number to the nearest 10, 100 or 1000 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 understand how, over time, the numeral system changed to include the concept of zero and place value

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Addition and Subtraction	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> 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 zero solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as $7 = \square - 9$ 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> solve simple one-step 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: <ul style="list-style-type: none"> a two-digit number and ones a two-digit number and tens two two-digit numbers adding three one-digit numbers show that addition of two numbers can be done in any order (commutative) and subtraction of one number from another cannot recognise & use inverse relationship between addition and subtraction and use this to check calculations and missing number problems 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> add and subtract numbers mentally, including: <ul style="list-style-type: none"> three-digit number and ones three-digit number and tens three-digit number and hundreds add and subtract numbers with up to three 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 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> 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

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Multiplication and division	<p>Pupils should be taught to:</p> <p>solve one step problems involving multiplication and division, calculating the answer using concrete objects, pictorial representations and arrays with the support of the teacher</p>	<p>Pupils should be taught to:</p> <p>recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers ^[1]_[SEP]</p> <p>calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication (x), division (÷) and equals (=) signs ^[1]_[SEP]</p> <p>show that multiplications of two numbers can be done in any order (commutative) and division of one number by another cannot ^[1]_[SEP]</p> <p>solve problems involving multiplication and division, using materials arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts ^[1]_[SEP]</p>	<p>Pupils should be taught to:</p> <p>recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables ^[1]_[SEP]</p> <p>write and calculate mathematical statements for multiplication and division using the multiplication tables that they know, including two-digit numbers times one-digit numbers, using mental and progressing to formal written methods ^[1]_[SEP]</p> <p>solve problems, including missing number problems, involving multiplication and division, including integer scaling problems and correspondence problems in which n objects are connected to m objects ^[1]_[SEP]</p>	<p>Pupils should be taught to:</p> <p>recall multiplication and division facts for multiplication tables up to 12 x 12 ^[1]_[SEP]</p> <p>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 ^[1]_[SEP]</p> <p>recognise and use factor pairs and commutatively in mental calculations ^[1]_[SEP]</p> <p>multiply two-digit and three-digit numbers by a one-digit number using formal written layout ^[1]_[SEP]</p> <p>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 which n objects are connected to m objects ^[1]_[SEP]</p>

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Fractions	<p>Pupils should be taught to:</p> <p>recognise, find and name a half as one of two equal parts of an object, shape or quantity $\frac{1}{2}$</p> <p>recognise, find and name a quarter as one of four equal parts of an object, shape or quantity $\frac{1}{4}$</p>	<p>Pupils should be taught to:</p> <p>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 $\frac{1}{2}$</p> <p>write simple fractions e.g. $\frac{1}{2}$ of $6 = 3$ and recognise the equivalent of two quarters and one half $\frac{1}{2}$</p>	<p>Pupils should be taught to:</p> <p>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 $\frac{1}{10}$</p> <p>recognise, find and write fractions of a discrete set of objects; unit fractions and non-unit fractions with small denominators $\frac{1}{2}$</p> <p>recognise and use fractions as numbers; unit fractions and non-unit fractions with small denominators $\frac{1}{2}$</p> <p>recognise and show, using diagrams, equivalent fractions with small denominators $\frac{1}{2}$</p> <p>add and subtract fractions with the same denominator within one whole $\frac{5}{7} + \frac{1}{7} = \frac{6}{7}$</p> <p>compare and order unit fractions with the same denominators $\frac{1}{2}$</p> <p>solve problems that involve all of the above $\frac{1}{2}$</p>	<p>Pupils should be taught to:</p> <p>recognise and show, using diagrams, families of common equivalent fractions $\frac{1}{2}$</p> <p>count up and down in hundredths; recognise that hundredths arise when dividing an object by a hundred and dividing tenths by ten $\frac{1}{10}$</p> <p>solve problems involving increasingly harder fractions to calculate quantities, including non-unit fractions where the answer is a whole number $\frac{1}{2}$</p> <p>add and subtract fractions with the same denominator $\frac{1}{2}$</p> <p>recognise and write decimal equivalents of any number of tenths or hundredths $\frac{1}{10}$</p> <p>recognise and write decimal equivalents to $\frac{1}{4}$; $\frac{1}{2}$, $\frac{3}{4}$</p> <p>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 $\frac{1}{10}$</p> <p>round decimals with one decimal place to the nearest whole number $\frac{1}{10}$</p> <p>compare numbers with the same number of decimal places up to two decimal places $\frac{1}{10}$</p> <p>solve simple measures and money problems involving fractions and decimals to two decimal places.</p>

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Measurement	<p>Pupils should be taught to:</p> <p>compare, describe and solve practical problems for:</p> <ul style="list-style-type: none"> lengths and heights (e.g. long/short, longer/ shorter, tall/short, double/half) ^{[1][1]}_[SEP] mass or weight (e.g. heavy/light, heavier than, lighter than) ^{[1][1]}_[SEP] capacity/volume (e.g. full/empty, more than, less than, half, half full, quarter) ^{[1][1]}_[SEP] time (e.g. quicker, slower, earlier, later) ^{[1][1]}_[SEP] <p>Measure and begin to record the following:</p> <ul style="list-style-type: none"> lengths and heights ^{[1][1]}_[SEP] mass/weight ^{[1][1]}_[SEP] capacity and volume ^{[1][1]}_[SEP] time (hours, minutes, seconds) ^{[1][1]}_[SEP] <p>recognise and know the value of different denominations of coins and notes ^{[1][1]}_[SEP]</p> <ul style="list-style-type: none"> sequence events in chronological order using language (e.g. before, after, next, first, today, tomorrow, morning, afternoon and evening) ^{[1][1]}_[SEP] recognise and use the language relating to dates, including days of the week, weeks, months and years ^{[1][1]}_[SEP] tell the time to the hour and half past the hour and draw the hands on a clock face 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> 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 = ^{[1][1]}_[SEP] recognise and use symbols for pounds (£) and pence (p); combine amounts to make a particular value ^{[1][1]}_[SEP] find different combinations of coins that equal the same amounts of money ^{[1][1]}_[SEP] solve simple problems in a practical context involving addition and subtraction of money of the same unit, including giving change ^{[1][1]}_[SEP] compare & sequence intervals of time tell and write time to five minutes, including quarter past/to the hour and draw the hands on a clock face to show these times ^{[1][1]}_[SEP] know the number of minutes in an hour and the number of hours in a day 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> measure, compare, add and subtract: lengths (m/cm/mm); mass (kg/g); volume/capacity (l/ml) ^{[1][1]}_[SEP] measure the perimeter of simple 2-D shapes ^{[1][1]}_[SEP] add and subtract amounts of money giving change, using both £ and p in practical contexts ^{[1][1]}_[SEP] tell and write the time from an analogue clock, including using Roman numerals from 1 to X11, and 12 hour and 24 hour clocks ^{[1][1]}_[SEP] estimate and read time to the nearest minute; record and compare time in terms of seconds, minutes, hours and o'clock; use vocabulary such as am/pm, morning, afternoon, noon and midnight ^{[1][1]}_[SEP] know the number of seconds in a minute and the number of days in each month, year and leap year ^{[1][1]}_[SEP] compare durations of events, for example to calculate the time taken by particular events or tasks. ^{[1][1]}_[SEP] 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> convert between different units of measure (e.g. kilometre to metre; hour to minute) ^{[1][1]}_[SEP] measure and calculate the perimeter of a rectilinear figure (including squares) in centimetres and metres ^{[1][1]}_[SEP] find the area of rectilinear shapes by counting ^{[1][1]}_[SEP] estimate, compare and calculate different measures, including money in pounds and pence ^{[1][1]}_[SEP] read, write and convert time between analogue and digital 12 and 24-hour clocks ^{[1][1]}_[SEP] solve problems involving converting from hours to minutes; minutes to seconds; years to months; weeks to days ^{[1][1]}_[SEP]

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Geometry	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> recognise and name common 2-D and 3-D shapes, including: [SEP] 2-D shapes (e.g. rectangles (including squares), circles and triangles) [SEP] 3-D shapes (e.g. cuboids (including cubes), pyramids and spheres) [SEP] describe position, directions and movements, including half, quarter and three-quarter turns 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> identify and describe the properties of 2-D shapes, including the number of sides and symmetry in a vertical line [SEP] identify and describe the properties of 3-D shapes, including the number of edges, vertices and faces [SEP] identify 2-D shapes on the surface of 3-D shapes, for example a circle on a cylinder and a triangle on a pyramid [SEP] compare and sort common 2-D and 3-D shapes and everyday objects order and arrange combinations of mathematical objects in patterns [SEP] use mathematical vocabulary to describe position, direction and movement, including distinguishing between rotation as a turn and in terms of right angles for quarter, half and three-quarter turns (clockwise/anti-clockwise) 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> draw 2-D shapes and make 3-D shapes using modelling materials; recognise 3-D shapes in different orientations; and describe them with increasing accuracy [SEP] recognise angles as a property of shape and associate angles with turning [SEP] 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 [SEP] Identify horizontal and vertical lines and pairs [SEP] 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> compare and classify geometric shapes, including quadrilaterals and triangles, based on their properties and sizes [SEP] identify acute and obtuse angles and compare and order angles up to two right angles by size [SEP] identify lines of symmetry in 2-D shapes presented in different orientations [SEP] complete a simple symmetric figure with respect to a specific line of symmetry [SEP] describe positions on a 2-D grid as coordinates in the first quadrant [SEP] describe movement between positions as translations of a given unit to the left/right and up/down [SEP] plot specified points and draw sides to complete a given polygon [SEP]

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Statistics		<p>interpret and construct simple pictograms, tally charts, block diagrams and simple tables ^[1]_[SEP]</p> <p>ask and answer simple questions by counting the number of objects in each category and sorting the categories by quantity ^[1]_[SEP]</p> <p>ask and answer questions about totalling and compare categorical data ^[1]_[SEP]</p>	<p>interpret and present data using bar charts, pictograms and tables ^[1]_[SEP]</p> <p>solve one-step and two-step questions such as 'How many more?' and 'How many fewer?' using information presented in scaled bar charts and pictograms and tables ^[1]_[SEP]</p>	<p>Pupils should be taught to:</p> <p>interpret and present discrete and continuous data using appropriate graphical methods, including bar charts and time graphs ^[1]_[SEP]</p> <p>solve comparison, sum and difference problems using information presented in bar charts, pictograms, tables and other graphs ^[1]_[SEP]</p>