



Mathematics Key Stage 2

National Curriculum Overview



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Mathematics Year 3

Number – number & place value	Number – addition & subtraction	Number – multiplication & division	Number - fractions	Measurement	Geometry – properties of shapes	Statistics
<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> ▪ count from 0 in multiples of 4, 8, 50 and 100; find 10 or 100 more or less than a given number ▪ recognise the place value of each digit in a 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 up to 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"> ▪ add and subtract numbers mentally, including: <ul style="list-style-type: none"> ▪ a three-digit number and ones ▪ a three-digit number and tens ▪ a 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 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> ▪ recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables ▪ write and calculate mathematical statements for multiplication and division using the multiplication tables that they know, including for two-digit numbers times one-digit numbers, using mental and progressing to formal written methods ▪ solve problems, including missing number problems, involving multiplication and division, including positive integer scaling problems and correspondence problems in which 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> ▪ count up and down in tenths; recognise that tenths arise from dividing an object into 10 equal parts and in dividing one-digit numbers or quantities by 10 ▪ recognise, find and write fractions of a discrete set of objects: unit fractions and non-unit fractions with small denominators ▪ recognise and use fractions as numbers: unit fractions and non-unit fractions with small denominators ▪ recognise and show, using diagrams, equivalent fractions with small denominators ▪ add and subtract 	<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) ▪ measure the perimeter of simple 2-D shapes ▪ add and subtract amounts of money to give change, using both £ and p in practical contexts ▪ tell and write the time from an analogue clock, including using Roman numerals from I to XII, and 12-hour and 24-hour clocks ▪ estimate and read time with increasing accuracy to the nearest minute; record and compare time in terms of seconds, minutes and hours; use vocabulary such as 	<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 ▪ recognise angles as a property of shape or a description of a turn ▪ 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 horizontal and vertical lines and pairs of perpendicular and 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> ▪ interpret and present data using bar charts, pictograms and tables ▪ solve one-step and two-step questions [for example, ‘How many more?’ and ‘How many fewer?’] using information presented in scaled bar charts and pictograms and tables



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	<p>use inverse operations to check answers</p> <ul style="list-style-type: none"> solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction. 	<p>n objects are connected to m objects.</p>	<p>fractions with the same denominator within one whole</p> <p>[for example, $\frac{5}{7} + \frac{1}{7} = \frac{6}{7}$]</p> <ul style="list-style-type: none"> compare and order unit fractions, and fractions with the same denominators solve problems that involve all of the above. 	<p>o'clock, a.m./p.m., morning, afternoon, noon and midnight</p> <ul style="list-style-type: none"> know the number of seconds in a minute and the number of days in each month, year and leap year compare durations of events [for example to calculate the time taken by particular events or tasks]. 	<p>parallel lines.</p>	
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Mathematics Year 4							
Number - number & place value	Number – addition & subtraction	Number – multiplication & division	Number – fractions (including decimals)	Measurement	Geometry – properties of shapes	Geometry – position & direction	Statistics
<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> count in multiples of 6, 7, 9, 25 and 1000 find 1000 more or less than a given number count backwards through zero to include negative 	<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 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> recall multiplication and division facts for multiplication tables up to 12×12 use place value, known and derived facts to 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> recall multiplication and division facts for multiplication tables up to 12×12 use place value, known and derived facts to multiply and 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> Convert between different units of measure [for example, kilometre to metre; hour to minute] measure and 	<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 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> describe positions on a 2-D grid as coordinates in the first quadrant describe movements between positions as 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> interpret and present discrete and continuous data using appropriate graphical methods, including bar charts and time



<p>numbers</p> <ul style="list-style-type: none"> 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 know that over time, the numeral 	<p>where appropriate</p> <ul style="list-style-type: none"> 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. 	<p>multiply and divide mentally, including:</p> <ul style="list-style-type: none"> multiply by 0 and 1; dividing by 1; multiplying together three numbers recognise and use factor pairs and commutativity in mental calculations multiply two-digit and three-digit numbers by a one-digit number using formal written layout solve problems involving multiplying and adding, including using the distributive law to multiply two digit numbers by one digit, integer scaling problems and harder correspondence problems such as n objects are connected to m objects. 	<p>divide mentally, including:</p> <ul style="list-style-type: none"> multiply by 0 and 1; dividing by 1; multiplying together three numbers recognise and use factor pairs and commutativity in mental calculations multiply two-digit and three-digit numbers by a one-digit number using formal written layout solve problems involving multiplying and adding, including using the distributive law to multiply two digit numbers by one digit, integer scaling problems and harder correspondence problems such as n objects are connected to m objects. 	<p>calculate the perimeter of a rectilinear figure (including squares) in centimetres and metres</p> <ul style="list-style-type: none"> find the area of rectilinear shapes by counting squares estimate, compare and calculate different measures, including money in pounds and pence read, write and convert time between analogue and digital 12- and 24-hour clocks solve problems involving converting from hours to minutes; minutes to seconds; years to months; 	<p>sizes</p> <ul style="list-style-type: none"> identify acute and obtuse angles and compare and order angles up to two right angles by size identify lines of symmetry in 2-D shapes presented in different orientations complete a simple symmetric figure with respect to a specific line of symmetry. 	<p>translations of a given unit to the left/right and up/down</p> <ul style="list-style-type: none"> plot specified points and draw sides to complete a given polygon. 	<p>graphs.</p> <ul style="list-style-type: none"> solve comparison, sum and difference problems using information presented in bar charts, pictograms, tables and other graphs.
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system changed to include the concept of zero and place value.				weeks to days.			
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Mathematics Year 5

Number – number & place value	Number – addition & subtraction	Number – multiplication & division	Number – fractions (including decimals & percentages)	Measurement	Geometry – properties of shapes	Geometry – position & direction	Statistics
<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> read, write, order and compare numbers to at least 1 000 000 and determine the value of each digit count forwards or backwards in steps of powers of 10 for any given number up to 1 000 000 interpret negative numbers in context, count forwards and backwards with positive and negative whole numbers, including through zero round any number up to 1 000 000 to the nearest 10, 100, 1000, 10 000 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction) add and subtract numbers mentally with increasingly large numbers use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy solve addition and subtraction multi-step problems in contexts, 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers know and use the vocabulary of prime numbers, prime factors and composite (non-prime) numbers establish whether a number up to 100 is prime and recall prime numbers up to 19 multiply numbers up to 4 digits by a one- or two-digit number using a formal written method, including long multiplication for two-digit numbers multiply and divide numbers 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> compare and order fractions whose denominators are all multiples of the same number identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths recognise mixed numbers and improper fractions and convert from one form to the other and write mathematical statements > 1 as a mixed number [for example, $\frac{2}{5} + \frac{4}{5} = \frac{6}{5} = 1\frac{1}{5}$] 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> convert between different units of metric measure (for example, kilometre and metre; centimetre and metre; centimetre and millimetre; gram and kilogram; litre and millilitre) understand and use approximate equivalences between metric units and common imperial units such as inches, pounds and pints measure and calculate the perimeter of composite 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> identify 3-D shapes, including cubes and other cuboids, from 2-D representations know angles are measured in degrees: estimate and compare acute, obtuse and reflex angles draw given angles, and measure them in degrees ($^{\circ}$) identify: <ul style="list-style-type: none"> angles at a point and one whole turn (total 360°) angles at a point on a straight line and $\frac{1}{2}$ a turn 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> 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. 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> solve comparison, sum and difference problems using information presented in a line graph complete, read and interpret information in tables, including timetables.



<p>and 100 000</p> <ul style="list-style-type: none"> ▪ solve number problems and practical problems that involve all of the above ▪ read Roman numerals to 1000 (M) and recognise years written in Roman numerals. 	<p>deciding which operations and methods to use and why.</p>	<p>mentally drawing upon known facts</p> <ul style="list-style-type: none"> ▪ divide numbers up to 4 digits by a one-digit number using the formal written method of short division and interpret remainders appropriately for the context ▪ multiply and divide whole numbers and those involving decimals by 10, 100 and 1000 ▪ recognise and use square numbers and cube numbers, and the notation for squared (²) and cubed (³) ▪ solve problems involving multiplication and division including using their knowledge of factors and multiples, squares and cubes 	<ul style="list-style-type: none"> ▪ add and subtract fractions with the same denominator and denominators that are multiples of the same number ▪ multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams ▪ read and write decimal numbers as fractions [for example, $0.71 = \frac{71}{100}$] ▪ recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents ▪ round decimals with two decimal places to the nearest whole number and to one decimal 	<p>rectilinear shapes in centimetres and metres</p> <ul style="list-style-type: none"> ▪ calculate and compare the area of rectangles (including squares), and including using standard units, square centimetres (cm²) and square metres (m²) and estimate the area of irregular shapes ▪ estimate volume [for example, using 1 cm³ blocks to build cuboids (including cubes)] and capacity [for example, using water] ▪ solve problems involving converting between units of time 	<p>(total 180°)</p> <ul style="list-style-type: none"> ▪ other multiples of 90° ▪ use the properties of rectangles to deduce related facts and find missing lengths and angles ▪ distinguish between regular and irregular polygons based on reasoning about equal sides and angles. 		
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		<ul style="list-style-type: none"> ▪ 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. 	<p>place</p> <ul style="list-style-type: none"> ▪ read, write, order and compare numbers with up to three decimal places ▪ solve problems involving number up to three decimal places ▪ 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, and as a decimal ▪ solve problems which require knowing percentage and decimal equivalents of $\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{5}$, $\frac{2}{5}$, $\frac{4}{5}$ and those fractions with a denominator of a multiple of 10 or 25. 	<ul style="list-style-type: none"> ▪ use all four operations to solve problems involving measure [for example, length, mass, volume, money] using decimal notation, including scaling. 			
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Mathematics Year 6 (2014 – 2015)

Using & applying mathematics	Knowing & using number facts	Counting & understanding number	Calculating	Understanding shape	Measuring	Handling Data
<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> Explain reasoning and conclusions, using words, symbols or diagrams as appropriate Solve multi-step problems, and problems involving fractions, decimals and percentages; choose and use appropriate calculation strategies at each stage, including calculator use Tabulate systematically the information in a problem or puzzle; identify and record the steps or calculations 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> Use knowledge of place value and multiplication facts to 10×10 to derive related multiplication and division facts involving decimals (e.g. 0.8×7, $4.8 \div 6$) Use approximations, inverse operations and tests of divisibility to estimate and check results Use knowledge of multiplication facts to derive quickly squares of numbers to 12×12 and the corresponding squares of multiples of 10 Recognise that prime numbers have only two factors and 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> Express a larger whole number as a fraction of a smaller one (e.g. recognise that 8 slices of a 5-slice pizza represents $8 \div 5$ or 1 $3 \div 5$ pizzas); simplify fractions by cancelling common factors; order a set of fractions by converting them to fractions with a common denominator Express one quantity as a percentage of another (e.g. express £400 as a percentage of £1000); find equivalent percentages, decimals and fractions Solve simple problems involving direct proportion by scaling quantities up or 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> Calculate mentally with integers and decimals: $U.t \pm U.t$, $TU \times U$, $TU \div U$, $U.t \times U$, $U.t \div U$ Use efficient written methods to add and subtract integers and decimals, to multiply and divide integers and decimals by a one-digit integer, and to multiply two-digit and three-digit integers by a two-digit integer Use a calculator to solve problems involving multi-step calculations Relate fractions to multiplication and division 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> Describe, identify and visualise parallel and perpendicular edges or faces; use these properties to classify 2-D shapes and 3-D solids Make and draw shapes with increasing accuracy and apply knowledge of their properties Estimate angles, and use a protractor to measure and draw them, on 	<p>Pupils should be taught to :</p> <ul style="list-style-type: none"> Select and use standard metric units of measure and convert between units using decimals to two places (e.g. change 2.75 litres to 2750 ml, or vice versa) Solve problems by measuring, estimating and calculating; measure and calculate using imperial units still in everyday use; know their approximate metric values Read and interpret scales on a range of measuring instruments, recognising that the measurement made is approximate and recording results to a 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> Solve problems by collecting, selecting, processing, presenting and interpreting data, using ICT where appropriate; draw conclusions and identify further questions to ask Construct and interpret frequency tables, bar charts with grouped



<p>needed to solve it, using symbols where appropriate; interpret solutions in the original context and check their accuracy</p> <ul style="list-style-type: none"> Represent and interpret sequences, patterns and relationships involving numbers and shapes; suggest and test hypotheses; construct and use simple expressions and formulae in words then symbols (e.g. the cost of c pens at 15 pence each is 15c pence) Suggest, plan and develop lines of enquiry; collect, organise and represent information, interpret results and review methods; identify and answer 	<p>identify prime numbers less than 100; find the prime factors of two-digit numbers</p>	<ul style="list-style-type: none"> Use decimal notation for tenths, hundredths and thousandths; partition, round and order decimals with up to three places, and position them on the number line Find the difference between a positive and a negative integer, or two negative integers, in context 	<p>(e.g. $6 \div 2 = 1 \frac{1}{2}$ of $6 = 6 \times 1 \frac{1}{2}$); express a quotient as a fraction or decimal (e.g. $67 \div 5 = 13.4$ or $13 \frac{2}{5}$); find fractions and percentages of whole-number quantities (e.g. $\frac{5}{8}$ of 96, 65% of £260)</p>	<p>their own and in shapes; calculate angles in a triangle or around a point</p> <ul style="list-style-type: none"> Use coordinates in the first quadrant to draw, locate and complete shapes that meet given properties Visualise and draw on grids of different types where a shape will be after reflection, after translations, or after rotation through 90° or 180° about its centre or one of its vertices 	<p>required degree of accuracy; compare readings on different scales, for example when using different instruments</p> <ul style="list-style-type: none"> Calculate the perimeter and area of rectilinear shapes; estimate the area of an irregular shape by counting squares 	<p>discrete data, and line graphs; interpret pie charts</p> <ul style="list-style-type: none"> Describe and interpret results and solutions to problems using the mode, range, median and mean Describe and predict outcomes from data using the language of chance or likelihood
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related questions							
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Mathematics Year 6 (2015 – 2016)								
Number - number & place value	Number – addition, subtraction, multiplication & division	Number – fractions (including decimals & percentages)	Ratio & proportion	Algebra	Measurement	Geometry – properties of shapes	Geometry – position & direction	Statistics
<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> read, write, order and compare numbers up to 10 000 000 and determine the value of each digit round any whole number to a required degree of accuracy 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication divide numbers up to 4 digits by a two-digit whole number using the formal written method of long division, and interpret remainders as 	<p>Pupils should be taught to :</p> <ul style="list-style-type: none"> use common factors to simplify fractions; use common multiples to express fractions in the same denomination compare and order fractions, including fractions > 1 add and subtract fractions with different denominators 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> 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 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> use simple formulae generate and describe linear number sequences express missing number problems algebraically find pairs of numbers that satisfy an equation with two 	<p>Pupils should be taught to :</p> <ul style="list-style-type: none"> solve problems involving the calculation and conversion of units of measure, using decimal notation up to three decimal places where appropriate use, read, write and convert between standard units, converting measurements 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> draw 2-D shapes using given dimensions and angles recognise, describe and build simple 3-D shapes, including making nets compare and classify geometric shapes based on their 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> describe positions on the full coordinate grid (all four quadrants) draw and translate simple shapes on the coordinate plane, and reflect them in the axes. 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> interpret and construct pie charts and line graphs and use these to solve problem calculate and interpret the mean as an



<ul style="list-style-type: none"> use negative numbers in context, and calculate intervals across zero solve number and practical problems that involve all of the above. 	<p>whole number remainders, fractions, or by rounding, as appropriate for the context</p> <ul style="list-style-type: none"> divide numbers up to 4 digits by a two-digit number using the formal written method of short division where appropriate, interpreting remainders according to the context perform mental calculations, including with mixed operations and large numbers identify common factors, common multiples and prime numbers use their knowledge of the order of operations to carry out calculations involving the four 	<p>and mixed numbers, using the concept of equivalent fractions</p> <ul style="list-style-type: none"> multiply simple pairs of proper fractions, writing the answer in its simplest form [for example, $\frac{1}{4} \times \frac{1}{2} = \frac{1}{8}$] divide proper fractions by whole numbers [for example, $\frac{1}{3} \div 2 = \frac{1}{6}$] associate a fraction with division and calculate decimal fraction equivalents [for example, 0.375] for a simple fraction [for example, $\frac{3}{8}$] identify the value of each digit in numbers given to 	<p>calculation of percentages [for example, of measures, and such as 15% of 360] and the use of percentages for comparison</p> <ul style="list-style-type: none"> 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. 	<p>unknowns</p> <ul style="list-style-type: none"> enumerate possibilities of combinations of two variables 	<p>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</p> <ul style="list-style-type: none"> convert between miles and kilometres recognise that shapes with the same areas can have different perimeters and vice versa recognise when it is possible to use formulae for area and volume of shapes calculate the area of parallelograms and triangles calculate, estimate and compare volume of 	<p>properties and sizes and find unknown angles in any triangles, quadrilaterals, and regular polygons</p> <ul style="list-style-type: none"> illustrate and name parts of circles, including radius, diameter and circumference and know that the diameter is twice the radius recognise angles where they meet at a point, are on a straight line, or are vertically opposite, and find missing angles. 		<p>average</p>
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	<p>operations</p> <ul style="list-style-type: none"> ▪ solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why ▪ solve problems involving addition, subtraction, multiplication and division ▪ use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy. 	<p>three decimal places and multiply and divide numbers by 10, 100 and 1000 giving answers up to three decimal places</p> <ul style="list-style-type: none"> ▪ multiply one-digit numbers with up to two decimal places by whole numbers ▪ use written division methods in cases where the answer has up to two decimal places ▪ solve problems which require answers to be rounded to specified degrees of accuracy ▪ recall and use equivalences between simple fractions, decimals and percentages, including in different contexts. 			<p>cubes and cuboids using standard units, including cubic centimetres (cm^3) and cubic metres (m^3), and extending to other units [for example, mm^3 and km^3]</p>			
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