

Core learning in mathematics: links to the National Curriculum 2000

Underlined text in red indicates new objectives that add detail to the relevant National Curriculum Programme of Study.

Year 5

Using and applying mathematics

2006 objectives	National Curriculum 2000 KS2 programme of study	
<ul style="list-style-type: none"> Solve one- and two-step problems involving whole numbers and decimals and all four operations, choosing and using appropriate calculation strategies, including calculator use 	<ul style="list-style-type: none"> Choose, use and combine any of the four number operations to solve word problems involving numbers in 'real life', money or measures of length, mass, capacity or time, then perimeter and area Break down a more complex problem or calculation into simpler steps before attempting a solution Choose suitable number operations to solve a given problem, and recognise similar problems to which they apply Choose and use an appropriate way to calculate 	<p>N4a N1b N3a N4b</p>
<ul style="list-style-type: none"> <u>Represent a problem by identifying and recording the calculations needed to solve it</u>; find possible solutions and confirm them in the context of the problem 	<ul style="list-style-type: none"> Use notation diagrams and symbols correctly within a given problem Present and interpret solutions in the context of the problem Check results and ensure that solutions are reasonable in the context of the problem 	<p>N1g N1h D1e/N4c /S1d</p>
<ul style="list-style-type: none"> Plan and pursue an enquiry; present evidence by collecting, organising and interpreting information; <u>suggest extensions to the enquiry</u> 	<ul style="list-style-type: none"> Select and use handling data skills when solving problems Identify the information needed to carry out the tasks/solve a problem Decide how best to organise and present findings Present and interpret solutions 	<p>D1a N1b/D1c D1f S1g</p>
<ul style="list-style-type: none"> Explore patterns, properties and relationships and propose a general statement involving numbers or shapes; identify examples for which the statement is true or false 	<ul style="list-style-type: none"> Recognise, represent and interpret simple number relationships Understand and investigate general statements Search for pattern in their results; develop logical thinking Recognise and describe number patterns, using these to make predictions; make general statements and test these Approach spatial problems flexibly 	<p>N4d N1j N1k N2a S1c</p>

Framework review

<ul style="list-style-type: none"> Explain reasoning using diagrams, graphs and text; refine ways of recording using images and symbols 	<ul style="list-style-type: none"> Use mathematical reasoning to explain features of shape and space Organise work and refine ways of recording Use notation diagrams and symbols correctly within a given problem Explain and justify their methods and reasoning 	<p>S1h N1g N1f N4b/D1h</p>
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Counting and understanding number

2006 objectives	National Curriculum 2000 KS2 programme of study	
<ul style="list-style-type: none"> Count from any given number in whole number and decimal steps, extending beyond zero when counting backwards; relate the numbers to their position on a number line 	<ul style="list-style-type: none"> Recognise and continue number sequences formed by counting on or back in steps of constant size from any integer, extending to negative integers when counting back Order a set of negative integers Locate on a number line, and order, a set of numbers or measurements 	<p>N2a N2c N2i</p>
<ul style="list-style-type: none"> Explain what each digit represents in whole numbers and decimals with up to two places, and partition, round and order these numbers 	<ul style="list-style-type: none"> Order whole numbers, recognising that the position of a digit gives its value Understand and use decimal notation for tenths and hundredths 	<p>N2c N2i</p>
<ul style="list-style-type: none"> Express a smaller whole number as a fraction of a larger one; find equivalent fractions, e.g. $\frac{7}{10} = \frac{14}{20}$, or $\frac{19}{10} = 1\frac{9}{10}$; relate fractions to their decimal representations 	<ul style="list-style-type: none"> Understand equivalent fractions Recognise the equivalence between the decimal and fraction forms of one half, quarters, tenths and hundredths 	<p>N2e N2f</p>
<ul style="list-style-type: none"> Understand percentage as the number of parts in every 100 and express tenths and hundredths as percentages 	<ul style="list-style-type: none"> Understand that 'percentage' means the 'number of parts per 100' 	
<ul style="list-style-type: none"> Use sequences to scale numbers up or down; solve problems involving proportions of quantities, e.g. decrease quantities in a recipe designed to feed six people 	<ul style="list-style-type: none"> Solve simple problems involving direct proportion 	<p>N2h</p>

Knowing and using number facts

2006 objectives	National Curriculum 2000 KS2 programme of study	
<ul style="list-style-type: none"> Use knowledge of place value and addition and subtraction of two-digit numbers to derive sums and differences, doubles and halves of decimals, e.g. 6.5 ± 2.7, halve 5.6, double 0.34 	<ul style="list-style-type: none"> Double and halve any two-digit number 	<p>N3g</p>
<ul style="list-style-type: none"> Recall quickly multiplication facts up to 10×10, use to multiply pairs of multiples of 10 and 100 and derive quickly corresponding division facts 	<ul style="list-style-type: none"> Recall multiplication facts to 10×10 and use them to derive quickly the corresponding division facts 	<p>N3f</p>
<ul style="list-style-type: none"> Identify pairs of factors of two-digit whole numbers and find common multiples, e.g. for 6 and 9 	<ul style="list-style-type: none"> Find factor pairs of any two-digit integer 	<p>N2b</p>

Framework review

<ul style="list-style-type: none"> Use knowledge of rounding, place value, number facts and inverse operations to estimate and check calculations 	<ul style="list-style-type: none"> Estimate answers by approximating and checking that their results are reasonable by thinking about the context of the problem, and where necessary checking accuracy [e.g. by using the inverse operation, by repeating the calculation in a different order] Use approximations and other strategies to check that their answers are reasonable Make mental estimates of the answers to calculations; check results 	<p>N1e N4c N3i, N3j</p>
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Calculating

2006 objectives	National Curriculum 2000 KS2 programme of study	
<ul style="list-style-type: none"> Extend mental methods for whole-number calculations, e.g. to multiply a two-digit by one-digit number (e.g. 12×9), to multiply by 25 (e.g. 16×25), to subtract one near multiple of 1000 from another (e.g. $6070 - 4097$) 	<ul style="list-style-type: none"> Handle [mentally] particular cases of three-digit and four-digit additions and subtractions by using compensation or other methods [e.g. $3000 - 1997$, $4560 + 998$] Multiply and divide [mentally], at first in the range 1 to 100 [e.g. 27×3, $65 \div 5$], then for particular cases of larger numbers by using factors, distribution or other methods 	<p>N3e N3h</p>
<ul style="list-style-type: none"> Use efficient written methods to add and subtract whole numbers and decimals with up to two places 	<ul style="list-style-type: none"> Use written methods to add and subtract positive integers up to 10000, then add and subtract numbers involving decimals 	<p>N3i</p>
<ul style="list-style-type: none"> Use understanding of place value to multiply and divide whole numbers and decimals by 10, 100 or 1000 	<ul style="list-style-type: none"> Multiply and divide any integer by 10 or 100 then extend to multiplying and dividing by 1000; multiply and divide decimals by 10 or 100 	<p>N2c</p>
<ul style="list-style-type: none"> Refine and use efficient written methods to multiply and divide HTU \times U, TU \times TU, U.t \times U, and HTU \div U 	<ul style="list-style-type: none"> Use written methods for short multiplication and division by a single-digit integer of three-digit integers, then of numbers with decimals; then use long multiplication, at first for two-digit by two-digit integer calculations 	<p>N3j</p>
<ul style="list-style-type: none"> Find fractions using division, e.g. $\frac{1}{100}$ of 5 kg, and percentages of numbers and quantities, e.g. 10%, 5% and 15% of £80 	<ul style="list-style-type: none"> Find fractions of quantities Find percentages of whole number quantities 	<p>N2d N2f</p>
<ul style="list-style-type: none"> Use a calculator to solve problems, including those involving decimals or fractions, e.g. to find $\frac{3}{4}$ of 150 g; interpret the display correctly in the context of measurement 	<ul style="list-style-type: none"> Use a calculator for calculations involving several digits, including decimals; use a calculator to solve number problems [e.g. $4 \square \times 7 = 343$]; know how to enter and interpret money calculations and fractions 	<p>N3k</p>

Understanding shape

2006 objectives	National Curriculum 2000 KS2 programme of study	
<ul style="list-style-type: none"> Identify, visualise and describe properties of rectangles, triangles, regular polygons and 3-D solids; use knowledge of properties to draw 2-D shapes and identify and draw nets of 3-D shapes 	<ul style="list-style-type: none"> Visualise and describe 2-D and 3-D shapes and the way they behave, especially that of triangles, quadrilaterals, and prisms and pyramids of various kinds Make and draw with increasing accuracy 2-D and 3-D shapes and patterns; recognise reflective symmetry in regular polygons; recognise their geometrical features and properties and use these to classify shapes and solve problems Visualise 3-D shapes from 2-D drawings. 	<p>S2b S2c S2d</p>
<ul style="list-style-type: none"> Read and plot co-ordinates in the first quadrant; recognise parallel and perpendicular lines in grids and shapes; use a set-square and ruler to draw shapes with perpendicular or parallel sides 	<ul style="list-style-type: none"> Read and plot coordinates in the first quadrant Locate and draw shapes using coordinates in the first quadrant Recognise perpendicular and parallel lines 	<p>N4e S3c S2a</p>
<ul style="list-style-type: none"> Complete patterns with up to two lines of symmetry and draw the position of a shape after a reflection or translation 	<ul style="list-style-type: none"> Transform objects in practical situations; transform images using ICT; visualise and predict the position of a shape following a rotation, reflection or translation Identify and draw 2-D shapes in different orientations on grids; locate and draw shapes using coordinates in the first quadrant, then in all four quadrants 	<p>S3b S3c</p>
<ul style="list-style-type: none"> Estimate, draw and measure acute and obtuse angles using an angle measurer or protractor to a suitable degree of accuracy; calculate angles in a straight line 	<ul style="list-style-type: none"> Measure and draw acute and obtuse and right angles to the nearest degree Recognise that angles at a point on a straight line total 180 degrees 	<p>S4c S2a</p>

Measuring

2006 objectives	National Curriculum 2000 KS2 programme of study	
<ul style="list-style-type: none"> Read, choose, use and record standard metric units to estimate and measure length, weight and capacity to a suitable degree of accuracy, e.g. the nearest centimetre; convert larger to smaller units using decimals to one place, e.g. change 2.6 kg to 2600 g 	<ul style="list-style-type: none"> Recognise the need for standard units of length, mass and capacity, choose which ones are suitable for a task, and use them to make sensible estimates in everyday situations; convert one metric unit to another [e.g. convert 3.17kg to 3170g] Convert between centimetres and millimetres or metres, then between millimetres and metres, and metres and kilometres 	<p>S1a/S4a N2i</p>
<ul style="list-style-type: none"> Interpret a reading that lies between two unnumbered divisions on a scale 	<ul style="list-style-type: none"> Recognise that measurement is approximate; interpret numbers and read scales with increasing accuracy 	<p>S4b</p>
<ul style="list-style-type: none"> <u>Draw and measure lines to the nearest millimetre</u>; measure and calculate the perimeter of regular and irregular polygons; use the formula for the area of a rectangle to calculate its area 	<ul style="list-style-type: none"> Find perimeters of simple shapes; find areas of rectangles using the formula. 	<p>S4e</p>

Framework review

<ul style="list-style-type: none"> • Read timetables and time using 24-hour clock notation; use a calendar to calculate time intervals 	<ul style="list-style-type: none"> • Read the time from 24-hour clocks; use days and weeks, and know the relationship between them 	S4d
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Handling data

2006 objectives	National Curriculum 2000 KS2 programme of study	
<ul style="list-style-type: none"> • Describe the occurrence of familiar events using the language of chance or likelihood 	<ul style="list-style-type: none"> • Develop an understanding of probability through classroom situations; discuss events using a vocabulary that includes the words 'equally likely', 'fair', 'unfair', 'certain'. 	D2f
<ul style="list-style-type: none"> • Answer a set of related questions by collecting, selecting and organising relevant data; draw conclusions, using ICT to present features, and identify further questions to ask • Construct frequency tables, pictograms and bar and line graphs to represent the frequencies of events and changes over time 	<ul style="list-style-type: none"> • Solve problems involving data • Interpret tables, lists and charts used in everyday life; construct and interpret frequency tables • Represent and interpret discrete data using graphs and diagrams, including pictograms, bar charts and line graphs, using ICT where appropriate • Draw conclusions from statistics and graphs • Select and use appropriate mathematical equipment, including ICT 	D2a D2b D2c D2f N1c
<ul style="list-style-type: none"> • Find and interpret the mode of a set of data 	<ul style="list-style-type: none"> • Know that mode is a measure of average and use the idea to describe data sets 	D2d

