

## 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 4

#### Using and applying mathematics

2006 objectives	National Curriculum 2000 KS2 programme of study	
<ul style="list-style-type: none"> <li>Solve one- and two-step problems involving numbers, money or measures, including time; choose and carry out appropriate calculations, using calculator methods where appropriate</li> </ul>	<ul style="list-style-type: none"> <li>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</li> <li>Choose suitable number operations to solve a given problem, and recognise similar problems to which they apply</li> <li>Choose and use an appropriate way to calculate</li> </ul>	<p>N4a N3a N4b</p>
<ul style="list-style-type: none"> <li>Represent a puzzle or problem using number sentences, statements or diagrams; use these to solve the problem; present and interpret the solution in the context of the problem</li> </ul>	<ul style="list-style-type: none"> <li>Use notation diagrams and symbols correctly within a given problem</li> <li>Present and interpret solutions in the context of the problem</li> </ul>	<p>N1g N1h</p>
<ul style="list-style-type: none"> <li>Suggest a line of enquiry and the strategy needed to follow it; collect, organise and interpret selected information to find answers</li> </ul>	<ul style="list-style-type: none"> <li>Select and use handling data skills when solving problem</li> <li>Identify the information needed to carry out the tasks/solve a problem</li> <li>Organise work and record or represent it in a variety of ways</li> <li>Decide how best to organise and present findings</li> </ul>	<p>D1a N1b/D1c S1e D1f</p>
<ul style="list-style-type: none"> <li>Identify and use patterns, relationships and properties of numbers or shapes; investigate a statement involving numbers and test it with examples</li> </ul>	<ul style="list-style-type: none"> <li>Recognise, represent and interpret simple number relationships</li> <li>Understand and investigate general statements</li> <li>Search for pattern in their results; develop logical thinking</li> <li>Recognise and describe number patterns, using these to make predictions; make general statements, using words, and test these</li> </ul>	<p>N4d N1j N1k N2b</p>
<ul style="list-style-type: none"> <li>Report solutions to puzzles and problems, giving explanations and reasoning orally and in writing, using diagrams and symbols</li> </ul>	<ul style="list-style-type: none"> <li>Organise work and record or represent it in a variety of ways when presenting solutions to problems</li> <li>Explain and justify their methods and reasoning</li> </ul>	<p>S1e N4b/D1h</p>

## Counting and understanding number

2006 objectives	National Curriculum 2000 KS2 programme of study	
<ul style="list-style-type: none"> <li>Recognise and continue number sequences formed by counting on or back in steps of constant size</li> <li>Partition, round and order four-digit whole numbers; use positive and negative numbers in context and position them on a number line; state inequalities using the symbols &lt; and &gt;, e.g. <math>-3 &gt; -5</math>, <math>-1 &lt; +1</math></li> </ul>	<ul style="list-style-type: none"> <li>Recognise and continue number sequences formed by counting on or back in steps of constant size, extending to negative integers when counting back</li> <li>Use correctly the symbols &lt;, &gt;, =; order a set of negative integers</li> </ul>	N2a N2c
<ul style="list-style-type: none"> <li>Use decimal notation for tenths and hundredths and partition decimals; relate the notation to money and measurement; position one- and two-place decimals on a number line</li> </ul>	<ul style="list-style-type: none"> <li>Understand and use decimal notation for tenths and hundredths in context [e.g. order amounts of money, round a sum of money to the nearest £, convert a length such as 1.36 metres to centimetres and vice versa]; locate on a number line, and order, a set of numbers or measurements</li> </ul>	N2i
<ul style="list-style-type: none"> <li>Recognise the equivalence between decimal and fraction forms of one half, quarters, tenths and hundredths</li> </ul>	<ul style="list-style-type: none"> <li>Recognise the equivalence between the decimal and fraction forms of one half, quarters, tenths and hundredths</li> </ul>	N2f
<ul style="list-style-type: none"> <li>Use diagrams to identify equivalent fractions, e.g. <math>\frac{6}{8}</math> and <math>\frac{3}{4}</math>, or <math>\frac{70}{100}</math> and <math>\frac{7}{10}</math>; interpret mixed numbers and position them on a number line, e.g. <math>3\frac{1}{2}</math></li> </ul>	<ul style="list-style-type: none"> <li>Recognise approximate proportions of a whole and use simple fractions to describe them</li> <li>Understand unit fractions [e.g. one-third or one-eighth] then fractions that are several parts of one whole [e.g. two-thirds or five-eighths], locate them on a number line</li> <li>Understand simple equivalent fractions</li> </ul>	N2g N2d N2e
<ul style="list-style-type: none"> <li><u>Use the vocabulary of ratio and proportion to describe the relationship between two quantities, e.g. there are 2 red beads to every 3 blue beads, or 2 beads in every 5 beads are red; estimate a proportion, e.g. 'about one quarter of the apples in the box are green'</u></li> </ul>		

## Knowing and using number facts

2006 objectives	National Curriculum 2000 KS2 programme of study	
<ul style="list-style-type: none"> <li><u>Use knowledge of addition and subtraction facts and place value to derive sums and differences of pairs of multiples of 10, 100 or 1000</u></li> </ul>		
<ul style="list-style-type: none"> <li>Identify the doubles of two-digit numbers; <u>use to calculate doubles of multiples of 10 and 100 and derive the corresponding halves</u></li> </ul>	<ul style="list-style-type: none"> <li>Double and halve [mentally] any two-digit number</li> </ul>	N3g
<ul style="list-style-type: none"> <li>Derive and recall multiplication facts up to <math>10 \times 10</math>, the corresponding division facts and <u>multiples of numbers to 10 up to the tenth multiple</u></li> </ul>	<ul style="list-style-type: none"> <li>Recall multiplication facts to <math>10 \times 10</math> and use them to derive quickly the corresponding division facts</li> </ul>	N3f N2b

## Framework review

<ul style="list-style-type: none"> <li>Use knowledge of rounding, number operations and inverses to estimate and check calculations</li> </ul>	<ul style="list-style-type: none"> <li>Develop further their understanding of the four number operations and the relationships between them including inverses</li> <li>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]</li> <li>Use approximations and other strategies to check that their answers are reasonable</li> <li>Make mental estimates of the answers to calculations; check results</li> </ul>	<p>N3a N1e N4c N3i, N3j</p>
<ul style="list-style-type: none"> <li><u>Identify pairs of fractions that total 1</u></li> </ul>		

## Calculating

2006 objectives	National Curriculum 2000 KS2 programme of study	
<ul style="list-style-type: none"> <li>Add or subtract mentally pairs of two-digit whole numbers, e.g. <math>47 + 58</math>, <math>91 - 35</math></li> </ul>	<ul style="list-style-type: none"> <li>Add or subtract [mentally] any pair of two-digit whole numbers</li> </ul>	N3e
<ul style="list-style-type: none"> <li>Refine and use efficient written methods to add and subtract two- and three-digit whole numbers <u>and £.p</u></li> </ul>	<ul style="list-style-type: none"> <li>Use written methods to add and subtract positive integers less than 1000</li> </ul>	N3i
<ul style="list-style-type: none"> <li>Multiply and divide numbers to 1000 by 10 and then 100 (whole number answers), understanding the effect; <u>relate to scaling up or down</u></li> </ul>	<ul style="list-style-type: none"> <li>Multiply and divide any integer by 10 or 100</li> </ul>	N2c
<ul style="list-style-type: none"> <li>Develop and use written methods to record, support and explain multiplication and division of two-digit numbers by a one-digit number, including division with remainders, e.g. <math>15 \times 9</math>, <math>98 \div 6</math></li> </ul>	<ul style="list-style-type: none"> <li>Use written methods for short multiplication and division by a single-digit integer of two-digit then three-digit then four-digit integers, then of numbers with decimals; then use long multiplication, at first for two-digit by two-digit integer calculations, then for three-digit by two-digit calculations; extend division to informal methods of dividing by a two-digit divisor [e.g. <math>64 \div 16</math>]</li> <li>Find remainders after division</li> </ul>	N3j N3b
<ul style="list-style-type: none"> <li>Find fractions of numbers, quantities or shapes, e.g. <math>\frac{1}{5}</math> of 30 plums, <math>\frac{3}{8}</math> of a 6 by 4 rectangle</li> </ul>	<ul style="list-style-type: none"> <li>Find unit fractions and fractions that are several parts of a whole of shapes and quantities</li> </ul>	N2d
<ul style="list-style-type: none"> <li>Use a calculator to carry out one- and two-step calculations involving all four operations; recognise negative numbers in the display, correct mistaken entries and interpret the display correctly in the context of money</li> </ul>	<ul style="list-style-type: none"> <li>Use a calculator to solve number problems [e.g. <math>4\Box \times 7 = 343</math>]; know how to enter and interpret money calculations</li> </ul>	N3k

## Understanding shape

2006 objectives	National Curriculum 2000 KS2 programme of study	
<ul style="list-style-type: none"> <li>Draw polygons and classify them by identifying their properties, including their line symmetry</li> </ul>	<ul style="list-style-type: none"> <li>Draw 2-D shapes; recognise reflective symmetry in regular polygons</li> </ul>	S2c

## Framework review

<ul style="list-style-type: none"> <li>Visualise 3-D objects from 2-D drawings and make nets of common solids</li> </ul>	<ul style="list-style-type: none"> <li>Make and draw with increasing accuracy 2-D and 3-D shapes and patterns</li> <li>Visualise 3-D shapes from 2-D drawings.</li> </ul>	S2c S2d
<ul style="list-style-type: none"> <li>Recognise horizontal and vertical lines; use the eight compass points to describe direction; describe and identify the position of a square on a grid of squares</li> </ul>	<ul style="list-style-type: none"> <li>Visualise and describe movements using appropriate language</li> <li>Identify and draw 2-D shapes in different orientations on grids</li> </ul>	S3a S3c
<ul style="list-style-type: none"> <li>Know that angles are measured in degrees and that one whole turn is 360°; draw, compare and order angles less than 180°</li> </ul>	<ul style="list-style-type: none"> <li>Recognise angles as greater or less than a right angle or half-turn, estimate their size and order them</li> <li>Know that angles are measured in degrees and that one whole turn is 360</li> </ul>	S4c S2a

## Measuring

2006 objectives	National Curriculum 2000 KS2 programme of study	
<ul style="list-style-type: none"> <li>Choose and use standard metric units and their abbreviations when estimating, measuring and recording length, mass and capacity; know the meaning of kilo, centi and milli and, where appropriate, use decimal notation to record measurements, e.g. 1.3 m or 0.6 kg</li> </ul>	<ul style="list-style-type: none"> <li>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</li> <li>Record measurements using decimal notation</li> </ul>	S1a/S4a S4b
<ul style="list-style-type: none"> <li>Interpret intervals and divisions on partially numbered scales and record readings accurately, where appropriate to the nearest tenth of a unit</li> </ul>	<ul style="list-style-type: none"> <li>Interpret numbers and read scales with increasing accuracy; record measurements using decimal notation</li> </ul>	S4b
<ul style="list-style-type: none"> <li>Draw rectangles and measure and calculate their perimeters, find the area of rectilinear shapes drawn on a square grid by counting squares</li> </ul>	<ul style="list-style-type: none"> <li>Find perimeters of simple shapes; find areas of rectangles using the formula, understanding its connection to counting squares.</li> </ul>	S4e
<ul style="list-style-type: none"> <li>Read time to the nearest minute; use am, pm and 12-hour clock notation; choose units of time to measure time intervals; calculate time intervals from clocks and timetables</li> </ul>	<ul style="list-style-type: none"> <li>Read the time from analogue and digital 12-hour clocks; use seconds, minutes, hours and know the relationship between them</li> </ul>	S4d

## Handling data

2006 objectives	National Curriculum 2000 KS2 programme of study	
<ul style="list-style-type: none"> <li>Determine the data needed to answer a specific question; organise, present, analyse and interpret the data in tables, diagrams, tally charts, pictograms and bar charts, using ICT where appropriate</li> </ul>	<ul style="list-style-type: none"> <li>Solve problems involving data</li> <li>Interpret tables, lists and charts used in everyday life; construct and interpret frequency tables</li> <li>Represent and interpret data using graphs and diagrams, including pictograms, bar charts and line graphs, using ICT where appropriate</li> </ul>	D2a D2b D2e
<ul style="list-style-type: none"> <li>Compare the impact of representations where scales have intervals of differing step size</li> </ul>	<ul style="list-style-type: none"> <li>Draw conclusions from graphs and recognise when information is presented in a misleading way</li> </ul>	D2f

