

## Core learning in mathematics: links to the 1999 Framework for teaching mathematics

A blue box on the right shows that there is no equivalent in the new objectives. A blue box on the left shows that there is no equivalent in the 1999 objectives.

A pink box shows that the equivalent objective was in a different year group in the 1999 Framework.

### Year 5

#### Using and applying mathematics

| 2006 objectives  | 1999 Framework and Supplement of examples   |  |
|--|---|--|
| <ul style="list-style-type: none"> <li>Solve one- and two-step problems involving whole numbers and decimals and all four operations, choosing and using appropriate calculation strategies, including calculator use</li> <li>Represent a problem by identifying and recording the calculations needed to solve it; find possible solutions and confirm them in the context of the problem</li> </ul> | <ul style="list-style-type: none"> <li>Use all four operations to solve simple word problems involving numbers and quantities based on 'real life', money and measures (including time), using one or more steps, including finding simple percentages.</li> <li>Choose and use appropriate number operations to solve problems, and appropriate ways of calculating: mental, mental with jottings, written methods, calculator.</li> <li>Round up or down after division, depending on the context.</li> </ul> | Year 5<br>83, 85,<br>87, 89, 101<br><br>75<br><br>57 |
| <ul style="list-style-type: none"> <li>Plan and pursue an enquiry; present evidence by collecting, organising and interpreting information; suggest extensions to the enquiry</li> </ul>   | <ul style="list-style-type: none"> <li>Solve a problem by representing and interpreting data in tables, charts, graphs and diagrams, including those generated by a computer.</li> </ul>  | Year 5<br>113–117                                    |
| <ul style="list-style-type: none"> <li>Explore patterns, properties and relationships and propose a general statement involving numbers or shapes; identify examples for which the statement is true or false</li> </ul>   | <ul style="list-style-type: none"> <li>Solve mathematical problems or puzzles, recognise and explain patterns and relationships, generalise and predict. Suggest extensions asking 'What if...?'</li> <li>Recognise and extend number sequences.</li> <li>Make and investigate a general statement about familiar numbers or shapes by finding examples that satisfy it; explain a generalised relationship (formula) in words.</li> </ul>  | Year 5<br>79<br>17, 19, 21<br><br>81                 |
| <ul style="list-style-type: none"> <li>Explain reasoning using diagrams, graphs and text; refine ways of recording using images and symbols</li> </ul>   | <ul style="list-style-type: none"> <li>Explain methods and reasoning, orally and in writing.</li> </ul>   | Year 5<br>77   |

#### Counting and understanding number

| 2006 objectives   | 1999 Framework and Supplement of examples  |              |
|---|--|--------------|
| <ul style="list-style-type: none"> <li>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</li> </ul> | <ul style="list-style-type: none"> <li>Recognise and extend number sequences formed by counting from any number in steps of constant size, extending beyond zero when counting back, e.g. count on in steps of 25 to 1000, and then back; count on or back in steps of 0.1, 0.2, 0.3, ...</li> </ul> | Year 5<br>17 |

## Framework review

|   |   |                            |
|---|---|----------------------------|
| <ul style="list-style-type: none"> <li>Explain what each digit represents in whole numbers and decimals with up to two places, and partition, round and order these numbers</li> </ul>  | <ul style="list-style-type: none"> <li>Read and write whole numbers in figures and words, and know what each digit represents.</li> <li>Know what each digit represents in a number with up to two decimal places.</li> </ul>   | Year 5<br>3<br>29          |
| <ul style="list-style-type: none"> <li>Express a smaller whole number as a fraction of a larger one, e.g. recognise that 5 out of 8 is <math>\frac{5}{8}</math>; find equivalent fractions, e.g. <math>\frac{7}{10} = \frac{14}{20}</math>, or <math>\frac{19}{10} = 1\frac{9}{10}</math>; relate fractions to their decimal representations</li> </ul> | <ul style="list-style-type: none"> <li>Relate fractions to their decimal representations: that is, recognise the equivalence between the decimal and fraction forms of one half, one quarter, three quarters... and tenths and hundredths (e.g. <math>\frac{7}{10} = 0.7</math>, <math>\frac{27}{100} = 0.27</math>).</li> <li>Recognise when two simple fractions are equivalent, including relating hundredths to tenths (e.g. <math>\frac{70}{100} = \frac{7}{10}</math>).</li> <li>Change an improper fraction to a mixed number (e.g. change <math>\frac{13}{10}</math> to <math>1\frac{3}{10}</math>).</li> </ul> | Year 5<br>31<br>23         |
| <ul style="list-style-type: none"> <li>Understand percentage as the number of parts in every 100 and express tenths and hundredths as percentages</li> </ul>  | <ul style="list-style-type: none"> <li>Begin to understand percentage as the number of parts in every 100.</li> <li>Express one half, one quarter, three quarters, and tenths and hundredths, as percentages (e.g. know that <math>\frac{3}{4} = 75\%</math>).</li> </ul>   | Year 5<br>33               |
| <ul style="list-style-type: none"> <li>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</li> </ul>   | <ul style="list-style-type: none"> <li>Solve problems involving ratio and proportion.</li> </ul>  | <b>Year 6</b><br><b>27</b> |

## Knowing and using number facts

| 2006 objectives  | 1999 Framework and Supplement of examples   |                            |
|--|---|----------------------------|
| <ul style="list-style-type: none"> <li>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. <math>6.5 \pm 2.7</math>, halve 5.6, double 0.34</li> </ul> | <ul style="list-style-type: none"> <li>Derive quickly pairs of decimals that total 1 (e.g. <math>0.2 + 0.8</math>) or 10 (e.g. <math>6.2 + 3.8</math>).</li> <li>Use known number facts and place value for mental addition and subtraction (e.g. <math>7.4 + 9.8</math>, <math>9.2 - 8.6</math>).</li> </ul> | Year 5<br>39<br>45, 47     |
|  | <ul style="list-style-type: none"> <li>Derive quickly doubles of two-digit decimals (e.g. <math>3.8 \times 2</math>, <math>0.76 \times 2</math>), and the corresponding halves.</li> </ul>  | <b>Year 6</b><br><b>59</b> |
| <ul style="list-style-type: none"> <li>Recall quickly multiplication facts up to <math>10 \times 10</math>, use to multiply pairs of multiples of 10 and 100 and derive quickly corresponding division facts</li> </ul>                                | <ul style="list-style-type: none"> <li>Know by heart all multiplication facts up to <math>10 \times 10</math>; derive quickly division facts.</li> <li>Use known facts and place value to multiply and divide mentally.</li> </ul>  | Year 5<br>59<br>65         |
| <ul style="list-style-type: none"> <li>Identify pairs of factors of two-digit whole numbers and find common multiples, e.g. for 6 and 9</li> </ul>   | <ul style="list-style-type: none"> <li>Find all the pairs of factors of any number up to 100.</li> </ul>  | Year 5<br>21               |
| <ul style="list-style-type: none"> <li>Use knowledge of rounding, place value, number facts and inverse operations to estimate and check calculations</li> </ul>   | <ul style="list-style-type: none"> <li>Check results of calculations.</li> </ul>  | Year 5<br>73               |

## Calculating

| 2006 objectives   | 1999 Framework and Supplement of examples   |                                |
|---|---|--------------------------------|
| <ul style="list-style-type: none"> <li>Extend mental methods for whole-number calculations, e.g. to multiply a two-digit by one-digit number (e.g. <math>12 \times 9</math>), to multiply by 25 (e.g. <math>16 \times 25</math>), to subtract one near multiple of 1000 from another (e.g. <math>6070 - 4097</math>)</li> </ul> | <ul style="list-style-type: none"> <li>Use mental calculation strategies – several objectives, including:                             <ul style="list-style-type: none"> <li>partitioning;</li> <li>find a difference by counting up (e.g. <math>5003 - 4996</math>);</li> <li>use related facts, e.g. to multiply by 25, multiply by 100 then divide by 4.</li> </ul> </li> </ul>  | Year 5<br>41, 43<br>61, 63, 65 |
| <ul style="list-style-type: none"> <li>Use efficient written methods to add and subtract whole numbers and decimals with up to two places</li> </ul>  | <ul style="list-style-type: none"> <li>Extend written methods to:                             <ul style="list-style-type: none"> <li>addition of more than two integers;</li> <li>addition or subtraction of a pair of decimal fractions (e.g. <math>£29.78 + £53.34</math>).</li> </ul> </li> </ul>  | Year 5<br>49, 51               |
| <ul style="list-style-type: none"> <li>Use understanding of place value to multiply and divide whole numbers and decimals by 10, 100 or 1000</li> </ul>   | <ul style="list-style-type: none"> <li>Multiply and divide decimals by 10 or 100 and integers by 1000 explain the effect.</li> </ul>  | <b>Year 6</b><br><b>7</b>      |
| <ul style="list-style-type: none"> <li>Refine and use efficient written methods to multiply and divide <math>HTU \times U</math>, <math>TU \times TU</math>, <math>U.t \times U</math>, and <math>HTU \div U</math></li> </ul>  | <ul style="list-style-type: none"> <li>Extend written methods to <math>HTU</math> or <math>U.t</math> by <math>U</math>; long multiplication of <math>TU</math> by <math>TU</math>; <math>HTU</math> by <math>U</math> (integer remainder).</li> </ul>  | Year 5<br>67, 69               |
| <ul style="list-style-type: none"> <li>Find fractions using division, e.g. <math>\frac{1}{100}</math> of 5 kg, and percentages of numbers and quantities, e.g. 10%, 5% and 15% of £80</li> </ul>  | <ul style="list-style-type: none"> <li>Relate fractions to division, and use division to find simple fractions, including tenths and hundredths, of numbers and quantities (e.g. <math>\frac{3}{4}</math> of 12, <math>\frac{1}{10}</math> of 50, <math>\frac{1}{100}</math> of £3).</li> <li>Find simple percentages of small whole-number quantities (e.g. 25% of £8).</li> </ul> | Year 5<br>25<br>33             |
| <ul style="list-style-type: none"> <li>Use a calculator to solve problems, including those involving decimals or fractions, e.g. to find <math>\frac{3}{4}</math> of 150 g; interpret the display correctly in the context of measurement</li> </ul>  | <ul style="list-style-type: none"> <li>Develop calculator skills and use a calculator effectively.</li> </ul>   | Year 5<br>71                   |

## Understanding shape

| 2006 objectives  | 1999 Framework and Supplement of examples   |                             |
|--|---|-----------------------------|
| <ul style="list-style-type: none"> <li>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</li> </ul>   | <ul style="list-style-type: none"> <li>Recognise properties of rectangles; classify triangles (isosceles, equilateral, scalene), using criteria such as equal sides, equal angles, lines of symmetry.</li> <li>Make shapes with increasing accuracy; visualise 3-D shapes from 2-D drawings; identify different nets for an open cube.</li> </ul> | Year 5<br>103, 105          |
|  | <ul style="list-style-type: none"> <li>Identify different nets for a closed cube.</li> </ul>  | <b>Year 6</b><br><b>105</b> |
| <ul style="list-style-type: none"> <li>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</li> </ul> | <ul style="list-style-type: none"> <li>Read and plot co-ordinates in the first quadrant.</li> <li>Recognise perpendicular and parallel lines.</li> </ul>  | Year 5<br>109               |

## Framework review

|  |   |               |
|--|---|---------------|
| <ul style="list-style-type: none"> <li>Complete patterns with up to two lines of symmetry and draw the position of a shape after a reflection or translation</li> </ul>  | <ul style="list-style-type: none"> <li>Recognise reflective symmetry in regular polygons, e.g. know that a square has four lines of symmetry and an equilateral triangle has three.</li> <li>Complete symmetrical patterns with two lines of symmetry at right angles (using squared paper or pegboard).</li> <li>Recognise where a shape will be after reflection in a mirror line parallel to one side (sides not all parallel or perpendicular to the mirror line).</li> <li>Recognise where a shape will be after a translation.</li> </ul> | Year 5<br>107 |
| <ul style="list-style-type: none"> <li>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</li> </ul> | <ul style="list-style-type: none"> <li>Understand and use angle measure in degrees; identify, estimate and order acute and obtuse angles.</li> <li>Use a protractor to measure and draw acute and obtuse angles to the nearest 5°.</li> <li>Calculate angles in a straight line.</li> </ul>   | Year 5<br>111 |

## Measuring

| 2006 objectives   | 1999 Framework and Supplement of examples   |                             |
|---|---|-----------------------------|
| <ul style="list-style-type: none"> <li>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</li> </ul> | <ul style="list-style-type: none"> <li>Use, read and write standard metric units (km, m, cm, mm, kg, g, l, ml), including their abbreviations, and relationships between them. Convert larger to smaller units (e.g. km to m, m to cm or mm, kg to g, l to ml).</li> <li>Suggest suitable units and measuring equipment to estimate or measure length, mass or capacity.</li> </ul> | Year 5<br>91<br>93          |
| <ul style="list-style-type: none"> <li>Interpret a reading that lies between two unnumbered divisions on a scale</li> </ul>   | <ul style="list-style-type: none"> <li>Record estimates and readings from scales to a suitable degree of accuracy.</li> </ul>   | Year 5<br>95                |
| <ul style="list-style-type: none"> <li>Draw and measure lines to the nearest millimetre; measure and calculate the perimeter of regular and irregular polygons; use the formula for the area of a rectangle to calculate its area</li> </ul>  | <ul style="list-style-type: none"> <li>Measure and draw lines to the nearest millimetre.</li> <li>Measure and calculate perimeters of rectangles and regular polygons.</li> <li>Understand area measured in square centimetres (cm<sup>2</sup>); use the formula for the area of a rectangle.</li> </ul>  | Year 5<br>97                |
| <ul style="list-style-type: none"> <li>Read timetables and time using 24-hour clock notation; use a calendar to calculate time intervals</li> </ul>   | <ul style="list-style-type: none"> <li>Read the time on a 24-hour digital clock and use 24-hour clock notation, such as 19:53. Use timetables.</li> <li>Solve word problems involving time.</li> </ul>  | Year 5<br>99<br>89          |
|   | <ul style="list-style-type: none"> <li>Use a calendar.</li> </ul>   | <b>Year 4</b><br><b>100</b> |

## Handling data

| 2006 objectives   | 1999 Framework and Supplement of examples  |               |
|---|--|---------------|
| <ul style="list-style-type: none"> <li>Describe the occurrence of familiar events using the language of chance or likelihood</li> </ul> | <ul style="list-style-type: none"> <li>Discuss the chance or likelihood of particular events.</li> </ul> | Year 5<br>113 |

## Framework review

|  |   |                       |
|--|---|-----------------------|
| <ul style="list-style-type: none"> <li>• 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</li> <li>• Construct frequency tables, pictograms and bar and line graphs to represent the frequencies of events and changes over time</li> </ul> | <ul style="list-style-type: none"> <li>• Solve a problem by representing and interpreting data in tables, charts, graphs and diagrams, including those generated by a computer, e.g. bar line charts, vertical axis labelled in 2s, 5s, 10s, 20s or 100s, first where intermediate points have no meaning (e.g. scores on a dice rolled 50 times), then where they may have meaning (e.g. room temperature over time).</li> </ul> | <p>Year 5<br/>115</p> |
| <ul style="list-style-type: none"> <li>• Find and interpret the mode of a set of data</li> </ul>   | <ul style="list-style-type: none"> <li>• Find the mode of a set of data.</li> </ul>   | <p>Year 5<br/>117</p> |