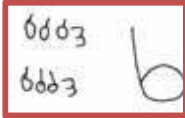




# Fairfield Primary School



## Mathematics Calculation Policy

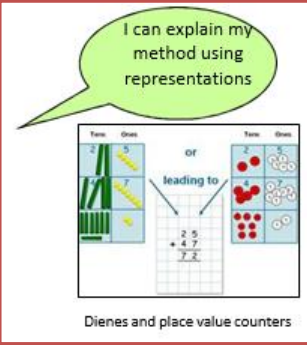
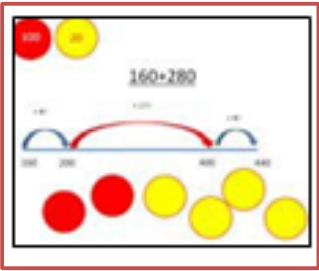

# Fairfield Primary School Calculation Policy for addition: Year 1

<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Mental Calculations</p>	<ul style="list-style-type: none"> <li>- Read, write and interpret mathematical statements using symbols +, -, =</li> <li>- Represent and use number bonds and related addition facts within 20</li> <li>- Add one digit and two-digit numbers up to 20, including zero.</li> <li>- Solve one-step problems using concrete objects and pictorial representations, and missing number problems such as : <math>\square + 9 = 11</math></li> <li>- Given a number, identify (and use the language) one more</li> <li>- Begin to compare (what's the same/different?) for commutative sums e.g. <math>3 + 7 = 7 + 3</math></li> <li>- Memorise and reason with number bonds to 10 &amp; 20 in several forms</li> </ul> 
<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Written Calculations</p>	<ul style="list-style-type: none"> <li>- Add using objects, Numicon, cubes etc. and number lines and tracks</li> <li>- Check with everyday objects</li> <li>- Ensure pre-calculation steps are understood, including:</li> <li>- Counting objects (including solving simple concrete problems)</li> <li>- Conservation of number:</li> <li>- Recognise place value in numbers beyond 20</li> <li>- Counting as reciting and as enumerating</li> </ul>  
<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Representations to support mental and written calculations</p>	<p style="text-align: center;"><b>Use a range of concrete and pictorial representations, including:</b></p> <div style="display: flex; justify-content: space-around;"> <div data-bbox="295 869 572 1191"> </div> <div data-bbox="657 958 1038 1133"> <p style="text-align: center;">Number lines</p> </div> <div data-bbox="1114 887 1378 1184"> </div> </div> <div style="display: flex; justify-content: space-around; margin-top: 20px;"> <div data-bbox="456 1214 767 1480"> <p style="text-align: center;">Real everyday objects</p> </div> <div data-bbox="940 1227 1267 1464"> </div> </div>
<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Links from other strands</p>	<ul style="list-style-type: none"> <li>- Combine and increase numbers, counting forwards and backwards.</li> <li>- Develop the concept of addition and subtraction and ... use these operations flexibly.</li> <li>- Discuss and solve problems in familiar practical contexts, including using quantities</li> <li>- Compare, describe and solve practical [measure] problems e.g. longer, more than, heavier than</li> <li>- Problems terminology should include: put together, add, altogether, total, take away, distance between, difference between, more than and less than.</li> </ul>

# Fairfield Primary School Calculation Policy for addition: Year 2

<p style="writing-mode: vertical-rl; transform: rotate(180deg);"><b>Calculations</b></p>	<p><b>Mental</b></p> <p><b>Add numbers using concrete objects, pictorial representations, and mentally, including:</b></p> <ul style="list-style-type: none"> <li>- a two-digit number and ones</li> <li>- a two-digit number and tens</li> <li>- two two-digit numbers</li> <li>- adding three one-digit numbers</li> </ul> <div style="border: 1px solid black; padding: 5px; display: inline-block;"> <math>17 + 2 = 19</math>    <math>12 + 4 = 16</math>  <math>57 + 2 = 59</math>    <math>32 + 34 = 66</math> </div>																																				
<p style="writing-mode: vertical-rl; transform: rotate(180deg);"><b>Written Calculations</b></p>	<p><b>Recall and use addition and subtraction facts to 20 facts fluently, and derive and use related facts up to 100</b></p> <p>Demonstrate the commutative law of addition</p> <ul style="list-style-type: none"> <li>- Re-partition numbers e.g.</li> <li>- Use a hundred square</li> <li>- Check calculations using inverse and by adding numbers in different order</li> </ul> <p>Begin to record addition in columns to support place value and prepare for formal written methods with larger numbers</p> <div style="border: 1px solid black; padding: 5px; display: inline-block;"> <math>12 + 30 = 30 + 12</math>  <math>\square + 25 = 25 + 41</math> </div> <div style="border: 1px solid black; padding: 5px; display: inline-block; margin-top: 10px;"> <math>65 = 60 + 5</math>  <math>65 = 50 + 15</math>  <math>65 = 40 + 25</math>  <math>65 = 30 + 35</math>  <math>65 = 20 + 45</math>  <math>65 = 10 + 55</math> </div> <div style="border: 1px solid black; padding: 5px; display: inline-block; margin-top: 10px;"> <math>30 + 4</math>  <math>20 + 5</math>  <hr style="width: 50%; margin: 0 auto;"/> <math>50 + 9</math> </div>																																				
<p style="writing-mode: vertical-rl; transform: rotate(180deg);"><b>Representations to support mental and written calculations</b></p>	<p><b>Use a range of concrete and pictorial representations, including:</b></p> <div style="display: flex; flex-wrap: wrap; justify-content: space-around;"> <div style="border: 1px solid black; padding: 5px; width: 25%;"> <p>Which line has most money? How much more?</p> <p>6 and how many more make 10? <math>6 + \square = 10</math></p> </div> <div style="border: 1px solid black; padding: 5px; width: 25%;"> <p><math>4+3</math></p> <p><math>8+5</math></p> <p><math>9-2</math></p> <p><math>13-7</math></p> </div> <div style="border: 1px solid black; padding: 5px; width: 25%;"> <table border="1" style="font-size: small;"> <tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td></tr> <tr><td>11</td><td>12</td><td>13</td><td>14</td><td>15</td><td>16</td></tr> <tr><td>21</td><td>22</td><td>23</td><td>24</td><td>25</td><td>26</td></tr> <tr><td>31</td><td>32</td><td>33</td><td>34</td><td>35</td><td>36</td></tr> <tr><td>41</td><td>42</td><td>43</td><td>44</td><td>45</td><td>46</td></tr> <tr><td>51</td><td>52</td><td>53</td><td>54</td><td>55</td><td>56</td></tr> </table> </div> <div style="border: 1px solid black; padding: 5px; width: 25%;"> <p>e.g. <math>34 + 23 = 57</math></p> <p>Number lines</p> </div> </div> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p>25 add 6</p> <p>Bead strings</p> </div> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p>Real everyday objects</p> </div>	1	2	3	4	5	6	11	12	13	14	15	16	21	22	23	24	25	26	31	32	33	34	35	36	41	42	43	44	45	46	51	52	53	54	55	56
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<p style="writing-mode: vertical-rl; transform: rotate(180deg);"><b>Fractions</b></p>	<p>Counting in fractions up to 10, starting from any numbers and using the <math>\frac{1}{2}</math> and <math>\frac{2}{4}</math> equivalence on the number line:</p> <div style="border: 1px solid black; padding: 5px; text-align: center;"> <math>1 \frac{1}{4}</math>   <math>1 \frac{1}{2}</math>   <math>1 \frac{3}{4}</math>   <math>2</math>   <math>2 \frac{1}{4}</math>   <math>2 \frac{1}{2}</math> </div>																																				
<p style="writing-mode: vertical-rl; transform: rotate(180deg);"><b>Links from other strands</b></p>	<p><b>Solve problems:</b></p> <ul style="list-style-type: none"> <li>- Using concrete objects, pictorial representations (numbers, quantities &amp; measures)</li> <li>- Applying increasing knowledge of mental &amp; written methods</li> <li>- Partition numbers in different ways</li> <li>- Discuss and solve problems that emphasise the value of each digit in two-digit numbers</li> </ul> <p>(They should) develop the concept of addition and subtraction and ... use these operations flexibly. (Number-addition and subtraction, Non-statutory guidance.)</p>																																				

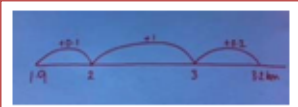
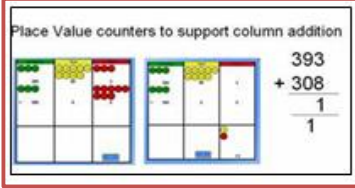
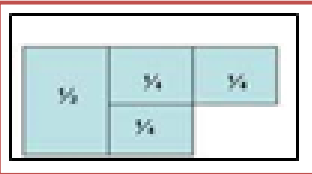
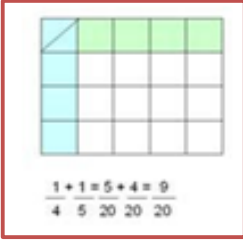
# Fairfield Primary School Calculation Policy for addition: Year 3

<p style="writing-mode: vertical-rl; transform: rotate(180deg);"><b>Mental Calculations</b></p>	<p><b>Add numbers mentally, including:</b></p> <ul style="list-style-type: none"> <li>-a three-digit number and ones</li> <li>-a three-digit number and tens</li> <li>-a three-digit number and hundreds</li> </ul> <p>-Partition all numbers and recombine, start with TU + TU then HTU + TU</p> <p>-Use straws, dienes, place value , counters, empty number lines</p> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p><b>Common mental calculation strategies:</b></p> <ul style="list-style-type: none"> <li>- Partitioning and recombining</li> <li>- Doubles and near doubles</li> <li>- Use number pairs to 10 and 100</li> <li>- Adding near multiples of ten and adjusting</li> <li>- Using patterns of similar calculations</li> <li>- Using known number facts</li> <li>- Bridging though ten, hundred</li> <li>- Complementary addition</li> </ul> </div>
<p style="writing-mode: vertical-rl; transform: rotate(180deg);"><b>Written Calculations</b></p>	<p><b>Add numbers with up to three digits, using formal written (columnar) methods</b></p> <p>Add to three digit numbers using physical and abstract representations (e.g. straws, dienes, place value counters, empty number lines)</p> <p>Children are taught to carry appropriately</p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="border: 1px solid black; padding: 5px;"> <math display="block">\begin{array}{r} 34 \\ +25 \\ \hline 59 \end{array}</math> </div> <div style="border: 1px solid black; padding: 5px;"> <math display="block">\begin{array}{r} 234 \\ + 527 \\ \hline 761 \\ 1 \end{array}</math> </div> </div> <div style="border: 1px solid black; padding: 5px; margin-top: 10px; text-align: center;"> <p><b>Revert to expanded methods if children find formal calculation method difficult</b></p> </div>
<p style="writing-mode: vertical-rl; transform: rotate(180deg);"><b>Representations to support mental and written calculations</b></p>	<p><b>Use a range of concrete, pictorial and abstract representations, including those below:</b></p> <div style="display: flex; justify-content: space-around; align-items: flex-start;"> <div style="border: 1px solid black; padding: 5px; text-align: center;"> <p style="color: green;">I can explain my method using representations</p>  <p>Dienes and place value counters</p> </div> <div style="border: 1px solid black; padding: 5px; text-align: center;">  <p>160+280</p> </div> <div style="border: 1px solid black; padding: 5px; text-align: center;"> <math display="block">\begin{array}{r} 76 + 21 \\ = 70 + 6 + 20 + 1 \\ = 90 + 7 = 97 \end{array}</math> <p>Partitioning and recombining</p> </div> </div> <div style="border: 1px solid black; padding: 5px; margin-top: 10px; text-align: center;"> <p><b>Ask: what is the same and what is different about all these methods?</b></p> </div>
<p style="writing-mode: vertical-rl; transform: rotate(180deg);"><b>Fractions</b></p>	<p><b>Addition of fractions with the same denominator within one whole.</b></p> <div style="border: 1px solid black; padding: 5px; text-align: center;"> <p>Addition of fractions with the same denominator</p> <math display="block">\frac{2}{5} + \frac{3}{5} = \frac{5}{5}</math>  </div>
<p style="writing-mode: vertical-rl; transform: rotate(180deg);"><b>Links from other strands</b></p>	<ul style="list-style-type: none"> <li>- Pupils should estimate the answers to a calculation &amp; use inverse operations to check answers.</li> <li>- Add amounts of money using both £ and p in practical contexts.</li> <li>- Measure, compare and add lengths (m/cm/mm), mass (kg/g) &amp; volume/capacity (l/ml)</li> </ul>

# Fairfield Primary School Calculation Policy for addition: Year 4

<p style="writing-mode: vertical-rl; transform: rotate(180deg);"><b>Informal methods to support mental Calculations</b></p>	<p>Practise mental methods with increasingly large numbers</p> <p><b>Consolidate partitioning and re-partitioning</b>  <b>Use compensation for adding too much/little and adjusting</b>  <b>Use straws, Dienes, place value counters, empty number lines etc.</b></p> <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 10px auto;"> <p>I know that <math>63 + 29</math> is the same as <math>63 + 30 - 1</math></p> </div> <div style="text-align: center; margin: 10px auto;"> </div> <div style="border: 1px solid black; padding: 5px; margin: 10px auto; width: fit-content;"> <p><b>Common mental calculation strategies:</b>          Partitioning and recombining          Doubles and near doubles          Use number pairs to 10 and 100          Adding near multiples of ten and adjusting          Using patterns of similar calculations          Using known number facts          Bridging though ten, hundred          Complementary addition</p> </div> <div style="border: 1px solid black; padding: 5px; margin: 10px auto; width: fit-content;"> <p><math>55 + 37 = 55 + 30 + 7</math>  <math>= 85 + 7</math>  <math>= 92</math></p> </div>																							
<p style="writing-mode: vertical-rl; transform: rotate(180deg);"><b>Written Calculations</b></p>	<p><b>Add numbers with up to four digits, using the formal written (columnar) method</b></p> <p>Add three digit numbers using columnar method and then move onto 4 digits. Include decimal addition for money</p> <div style="border: 1px solid black; padding: 5px; margin: 10px auto; width: fit-content;"> <p><b>Revert to expanded methods if children find formal calculation method difficult</b></p> </div> <div style="border: 1px solid black; padding: 5px; margin: 10px auto; width: fit-content;"> <p>789 + 642 becomes</p> <table style="margin: auto;"> <tr><td>7</td><td>8</td><td>9</td></tr> <tr><td>+</td><td>6</td><td>4</td><td>2</td></tr> <tr><td colspan="4"><hr/></td></tr> <tr><td>1</td><td>4</td><td>3</td><td>1</td></tr> <tr><td colspan="4"><hr/></td></tr> <tr><td></td><td>1</td><td>1</td><td></td></tr> </table> <p>Answer: 1431</p> </div>	7	8	9	+	6	4	2	<hr/>				1	4	3	1	<hr/>					1	1	
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<p style="writing-mode: vertical-rl; transform: rotate(180deg);"><b>Representations to support mental and written calculations</b></p>	<p><b>Use physical/pictorial representations alongside expanded and columnar methods.</b></p> <div style="display: flex; justify-content: space-around; align-items: flex-start;"> <div style="border: 1px solid black; padding: 5px; text-align: center;"> <p>Bundles of straws</p> <p><math>42 + 31 = 73</math></p> </div> <div style="border: 1px solid black; padding: 5px; text-align: center;"> <p>Using Dienes</p> </div> <div style="border: 1px solid black; padding: 5px; text-align: center;"> <p>Compensating in mental addition</p> <p><math>42 + 97 = 143</math></p> </div> <div style="border: 1px solid black; padding: 5px; text-align: center;"> <p>£12.32 + £11.81 <hr/>£24.13</p> </div> <div style="border: 1px solid black; padding: 5px; text-align: center;"> <p>0 + 50 + 3 10 + 40 + 3 20 + 30 + 3 30 + 20 + 3 40 + 10 + 3 50 + 0 + 3</p> <p>Re-partitioning</p> </div> </div> <div style="border: 1px solid black; padding: 5px; margin: 10px auto; width: fit-content;"> <p><b>Ask: what is the same and what is different about all these methods?</b></p> </div>																							
<p style="writing-mode: vertical-rl; transform: rotate(180deg);"><b>Fractions</b></p>	<p>Addition of fractions with the same denominator to become fluent through a variety of increasingly complex problems beyond one whole          Developing to the addition of fraction with mixed denominators (using the butterfly method to aid).          Counting using simple fractions and decimals, both forwards and backwards</p> <div style="text-align: center; margin: 10px auto;"> </div>																							
<p style="writing-mode: vertical-rl; transform: rotate(180deg);"><b>Links from other strands</b></p>	<ul style="list-style-type: none"> <li>- Estimate and use inverse operations to check answers.</li> <li>- Solve addition and subtraction two step problems in context, deciding which operations and methods to use and why</li> <li>- Identify, represent and estimate numbers using different representations (Place value).</li> <li>- Recognise the place value of each digit in a four-digit number.</li> <li>- Estimate, compare and calculate different measures, including amounts money in £ and p (including fractions and decimals)</li> </ul>																							

# Fairfield Primary School Calculation Policy for addition: Year 5





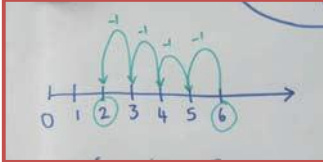
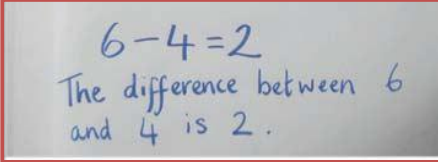
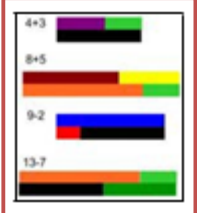

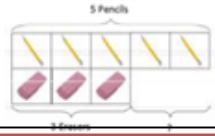


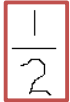
<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Informal methods to support mental Calculations</p>	<ul style="list-style-type: none"> <li>- Add numbers mentally with increasingly large numbers, e.g. <math>12\ 462 + 2300 = 14\ 762</math></li> <li>- Mentally add tenths, and one-digit numbers and tenths</li> <li>- Add decimals, including a mix of whole numbers and decimals, decimals with different numbers of places, and complements of 1 (e.g. <math>0.83 + 0.17 = 1</math>)</li> </ul> <p>Children use representations of choice</p> <p>Refer back to pictorial representations when needed</p> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p><b>Common mental calculation strategies:</b></p> <ul style="list-style-type: none"> <li>Partitioning and recombining</li> <li>Doubles and near doubles</li> <li>Use number pairs to 10 and 100</li> <li>Adding near multiples of ten and adjusting</li> <li>Using patterns of similar calculations</li> <li>Using known number facts</li> <li>Bridging through ten, hundred, tenth</li> <li>Complementary addition</li> </ul> </div>
<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Written Calculations</p>	<p><b>Add whole numbers with more than four digits, using the formal written (columnar) method</b></p> <p>Add three-digit numbers using columnar method and then move onto 4 digits. Include decimal addition for money</p> <div style="display: flex; justify-content: space-around; align-items: center; margin-top: 10px;"> <div style="border: 1px solid black; padding: 5px; background-color: #f0f0f0;"> <p><b>Revert to expanded methods if children find formal calculation method difficult (See Y3)</b></p> </div> <div style="border: 1px solid black; padding: 5px;"> <math display="block">\begin{array}{r} 24172\text{m} \\ + 5929\text{m} \\ \hline 30101\text{m} \\ \hline 1\ 1\ 1\ 1 \end{array}</math> </div> <div style="border: 1px solid black; padding: 5px;"> <math display="block">\begin{array}{r} \pounds 563.14 \\ + \pounds 207.88 \\ \hline \pounds 771.02 \\ \hline 1\ 1\ 1 \end{array}</math> </div> </div>
<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Representations to support mental and written calculations</p>	<p><b>Use physical/pictorial representations alongside columnar methods (where needed).</b></p> <div style="display: flex; justify-content: space-around; align-items: center; margin-top: 10px;"> <div style="border: 1px solid black; padding: 5px; width: 20%;"> <math display="block">\begin{aligned} 12\ 462 + 2300 \\ = 12\ 462 + 2000 + 300 \\ = 14\ 462 + 300 \\ = 14\ 762 \end{aligned}</math> <p style="text-align: center; font-size: small;">Partitioning and recombining</p> </div> <div style="border: 1px solid black; padding: 5px; width: 20%; text-align: center;">  <p style="font-size: small;">Jottings to support mental calculation</p> </div> <div style="border: 1px solid black; padding: 5px; width: 30%; text-align: center;"> <p style="font-size: x-small;">Place Value counters to support column addition</p>  </div> </div> <div style="border: 1px solid black; padding: 10px; text-align: center; margin-top: 10px; background-color: #f0f0f0;"> <p><b>Ask: what is the same and what is different about all these methods?</b></p> </div>
<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Fractions</p>	<p><b>Add fractions with the same denominator and denominators that are multiples of the same number (to become fluent through a variety of increasingly complex problems and add fractions that exceed 1 as a mixed number)</b></p> <div style="display: flex; justify-content: space-around; align-items: center; margin-top: 10px;"> <div style="border: 1px solid black; padding: 5px;">  </div> <div style="border: 1px solid black; padding: 5px; text-align: center;"> <math display="block">\frac{1}{2} + \frac{3}{4} = \frac{2}{4} + \frac{3}{4} = \frac{5}{4}</math> </div> <div style="border: 1px solid black; padding: 5px;">  </div> </div>
<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Links from other strands</p>	<ul style="list-style-type: none"> <li>- Solve problems involving up to three decimal numbers.</li> <li>- Solve addition and subtraction multi step problems in context, deciding which operations and methods to use and why</li> <li>- Use all four operations to solve problems involving measure [e.g. length, mass, volume, money] using decimal notation,</li> <li>- Calculate the perimeter of composite rectilinear squares in centimetres and metres</li> <li>- Use angle sum facts and other properties to make deductions about missing angles</li> <li>- Solve comparison, sum and difference problems using information presented in a line graph</li> </ul>



# Fairfield Primary School Calculation Policy for addition: Year 6


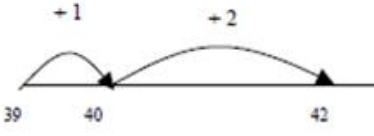
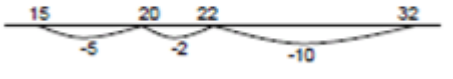
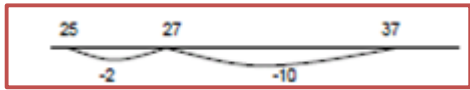

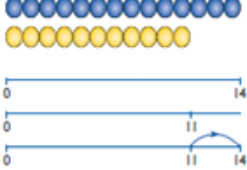


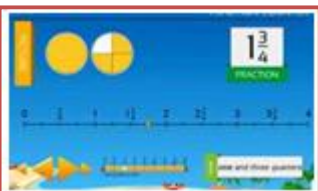
<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Informal methods to support mental Calculations</p>	<p><b>Perform mental calculations, including with mixed operations and large numbers</b> (<i>more complex calculations</i>)</p> <p>Children use representation of choice Consolidate partitioning and re-partitioning</p> <p>Use compensation for adding too much/little and adjusting Refer to pictorial and physical representation (when needed)</p> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p><b>Common mental calculation strategies:</b>                      Partitioning and recombining                      Doubles and near doubles                      Use number pairs to 10 and 100                      Adding near multiples of ten and adjusting                      Using known number facts                      Bridging though ten, hundred, tenth                      Complementary addition</p> </div>
<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Written Calculations</p>	<p><b>Add larger numbers using the formal written (columnar) method</b></p> <p>Add three digit numbers using columnar method and then move onto 4 digits. Include decimal addition for money</p> <div style="display: flex; justify-content: space-around; align-items: flex-start;"> <div style="border: 1px solid black; padding: 5px; text-align: center;"> <math display="block">\begin{array}{r} \pounds 563.14 \\ + \pounds 207.88 \\ \hline \pounds 771.02 \\ \hline 111 \end{array}</math> </div> <div style="border: 1px solid black; padding: 5px;"> <p>789 + 642 becomes</p> <math display="block">\begin{array}{r} 789 \\ + 642 \\ \hline 1431 \\ \hline 11 \end{array}</math> <p>Answer: 1431</p> </div> </div> <div style="border: 1px solid black; padding: 5px; margin-top: 10px; text-align: center;"> <p><b>Revert to expanded methods if children find formal calculation method difficult (See Y3)</b></p> </div>
<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Representations to support mental and written calculations</p>	<p><b>Use physical/pictorial representations alongside columnar methods (where needed).</b></p> <div style="display: flex; justify-content: space-around; align-items: flex-start;"> <div style="border: 1px solid black; padding: 5px;"> <math display="block">\begin{aligned} 12\,462 + 2300 \\ &amp;= 12\,462 + 2000 + 300 \\ &amp;= 14\,462 + 300 \\ &amp;= 14\,762 \end{aligned}</math> </div> <div style="border: 1px solid black; padding: 5px; text-align: center;"> <p>Partitioning and recombining</p> </div> <div style="border: 1px solid black; padding: 5px;"> <math display="block">\begin{aligned} 234\text{ kg} + 49\text{ kg} &amp;= 273\text{ kg} \\ 200 + 30 + 4 \\ &amp;40 + 9 \\ \hline 200 + 70 + 13 \end{aligned}</math> </div> </div> <div style="border: 1px solid black; padding: 5px; margin-top: 10px; text-align: center;"> <p><b>Ask: what is the same and what is different about all these methods?</b></p> </div>
<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Fractions</p>	<ul style="list-style-type: none"> <li>- Add fractions with different denominators and mixed numbers, using the concept of equivalent fractions</li> <li>- Start with fractions where the denominator of one fraction is a multiple of the other (e.g. <math>\frac{1}{2} + \frac{1}{8} = \frac{5}{8}</math>) and progress to varied and increasingly complex problems</li> <li>- Practise calculations with simple fractions and decimal equivalents to aid fluency</li> </ul> <div style="border: 1px solid black; padding: 5px; margin-top: 10px; text-align: center;"> <math display="block">\frac{2}{5} + \frac{3}{8} = \frac{31}{40}</math> </div>
<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Links from other strands</p>	<ul style="list-style-type: none"> <li>- Use their knowledge of the order of operations to carry out calculations involving the four operations (BIDMAS)</li> <li>- Solve problems involving all four operations</li> <li>- Algebra: use symbols and letters to represent variable and unknowns e.g. <math>a + b = b + a</math></li> <li>- Solve problems involving the calculation and conversions of units of measure, using decimal notation of up to three decimal places where appropriate</li> <li>- Using the number line, pupils use, add and subtract positive and negative integers measures such as temperature</li> <li>- Calculate and interpret the mean as an average</li> <li>- Interpret and construct pie charts and line graphs and use these to solve problems</li> <li>- Find missing angles in triangles, quadrilaterals, around a point and on straight lines.</li> </ul>

# Fairfield Primary School Calculation Policy for subtraction: Year 1


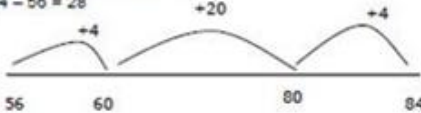
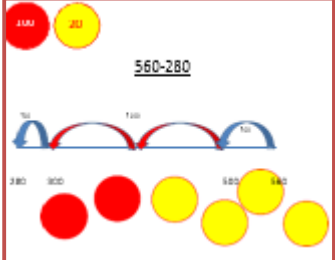

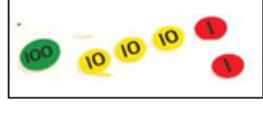

<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Informal methods to support mental Calculations</p>	<ul style="list-style-type: none"> <li>- Subtract one digit and two-digit numbers to 20, including zero.</li> <li>- Read, write and interpret mathematical statements using symbols (+, -, =) signs.</li> <li>- Represent and use number bonds and related addition facts within 20</li> <li>- Solve one-step problems using concrete objects and pictorial representations, and missing number problems such as <math>\_\_\_ - 9 = 7</math></li> <li>- Memorise and reason with number bonds</li> <li>- Add using objects, Numicon, cubes etc and number lines and tracks Check with everyday objects</li> <li>- Ensure pre-calculation steps are understood, including: Counting objects.</li> <li>- Conservation of number</li> </ul> <div data-bbox="1054 197 1377 387"> <p>Understand subtraction as 'take away'</p>  <p>Find a 'difference' by counting up:</p> </div> <div data-bbox="1098 405 1334 539">  </div> <div data-bbox="1082 584 1334 651">  </div>
<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Written Calculations</p>	<p style="text-align: center;"><b>Subtract one-digit and two-digit numbers to 20, including zero.</b></p> <div data-bbox="467 696 767 875"> <math display="block">7 - 3 = \square, 7 - \square = 4</math> <math display="block">\square - 3 = 4, 17 - 13 = \square</math> <math display="block">17 - \square = 4</math> </div> <div data-bbox="791 696 1230 875">  </div> <p style="text-align: center;"><b>Read, write and interpret mathematical statements involving addition (+), subtraction (-) and equals (=) signs.</b></p> <div data-bbox="443 954 767 1115">  </div> <div data-bbox="791 954 1230 1115">  </div> <p style="text-align: center;"><b>Represent and use number bonds and related subtraction facts within 20.</b></p>
<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Representations to support mental and written calculations</p>	<p style="text-align: center;"><b>Use physical/pictorial representations (where needed).</b></p> <div data-bbox="347 1223 544 1435">  </div> <div data-bbox="268 1458 619 1581">  <p>Hands, and children themselves.</p> </div> <div data-bbox="639 1223 1023 1536"> <p><b>Subtraction: Comparison Model</b></p> <p>Peter has 5 pencils and 3 erasers. How many more pencils than erasers does he have?</p>  </div> <div data-bbox="1098 1211 1321 1469"> <p>Which line has most money? How much more?</p>  <p>6 and how many more make 10? <math>6 + \square = 10</math></p> </div> <div data-bbox="1054 1480 1369 1581">  </div>
<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Fractions</p>	<ul style="list-style-type: none"> <li>- Find <math>\frac{1}{2}</math> of a group of objects and begin to write it as a fraction</li> </ul> <div data-bbox="810 1648 879 1749">  </div>
<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Links from other strands</p>	<ul style="list-style-type: none"> <li>- Pupils should combine and increase numbers, counting forwards and backwards.</li> <li>- (They should) develop the concept of addition and subtraction and ... use these operations flexibly.</li> <li>- Problems should include the terms: put together, add, altogether, total, take away, distance between, difference between, more than and less than, so that pupils develop the concept of addition and subtraction and are enabled to use these operations flexibly.</li> <li>- Pupils discuss and solve problems in familiar practical contexts.</li> <li>- Pupils compare, describe and solve practical (measurement) problems.</li> </ul>



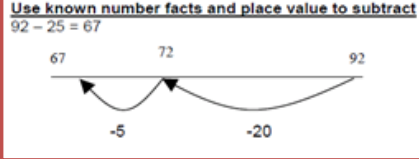
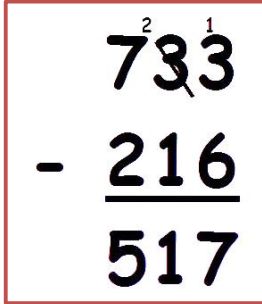

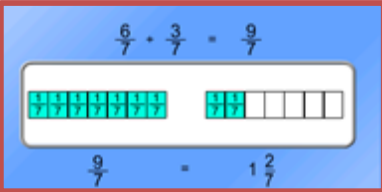
# Fairfield Primary School Calculation Policy for subtraction: Year 2

<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Informal methods to support mental Calculations</p>	<p><b>Add and subtract numbers using concrete objects, pictorial representations, and mentally, including:</b></p> <ul style="list-style-type: none"> <li>- a two-digit number and ones</li> <li>- a two-digit number and tens</li> <li>- two two-digit numbers</li> <li>- adding three one-digit numbers</li> </ul> <p style="text-align: right;"></p> <p style="text-align: center;"><b>Jottings to support informal methods:</b></p> <div style="display: flex; justify-content: space-around;"> <div data-bbox="335 459 774 750"> <p><u>- = signs and missing numbers</u> Continue using a range of equations as in Year 1 but with appropriate numbers. Extend to <math>14 + 5 = 20 - \square</math> Find a small difference by counting up <math>42 - 39 = 3</math></p>  </div> <div data-bbox="861 548 1348 728"> <p><u>Bridge through 10 where necessary</u> <math>32 - 17</math></p>  </div> </div> <p style="text-align: right;"><math>54 - 32 = 22</math></p>
<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Written Calculations</p>	<p style="text-align: center;"><b>Written recording:</b> <math>37 - 12 = 37 - 10 - 2 = 27 - 2 = 25</math></p> 
<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Representations to support mental and written calculations</p>	<p><u>Informal methods to support written subtraction calculations</u> Practical partitioning of a 2-digit number</p> <div style="display: flex; align-items: center;"> <div data-bbox="279 1041 710 1243" style="border: 1px solid red; padding: 5px;">  <p>Which line has most money? How much more?</p> </div> <div style="margin: 0 20px; font-size: 2em;">→</div> <div data-bbox="957 1041 1380 1243" style="border: 1px solid red; padding: 5px;"> <p><b>In Year 1 leads to:</b></p>  <p>The difference between 11 and 14 is 3. <math>14 - 11 = 3</math> <math>11 + \square = 14</math></p> </div> </div> <p>Bundles of straws or dienes to represent and partition 2 digit numbers. Subtract (without decomposition) using partitioning and equipment, e.g.</p> <p>To calculate <math>35 - 22</math>, remove 22.  Then record: <math>35 - 22 = 13</math>. </p> <p>Continue to use of a range of concrete and pictorial representations from Year 1—including Bar model to support understanding of <b>difference</b>.</p>
<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Fractions</p>	<ul style="list-style-type: none"> <li>- Pupils should count in fractions up to 10, starting from any number and using the and equivalence on the number line (for example, <math>1 \frac{1}{4}</math>, <math>1 \frac{1}{2}</math>, <math>1 \frac{3}{4}</math>, 2.)</li> <li>- Use concrete and pictorial models of fractions to assist with counting e.g. paper cups, plates, shapes etc.</li> </ul> 
<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Links from other strands</p>	<ul style="list-style-type: none"> <li>- Recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100.</li> <li>- Pupils should partition numbers in different ways (for example, <math>23 = 20 + 3</math> and <math>23 = 10 + 13</math>) to support subtraction.</li> </ul> <div style="border: 1px solid black; padding: 5px; width: fit-content; margin-left: auto;"> <math>55 + 45 = 100</math>  <math>45 + 55 = 100</math>  <math>35 + 65 = 100</math>  <math>100 - 55 = 45</math>  <math>100 - 45 = 55</math>  <math>100 - 35 = 65</math> </div>

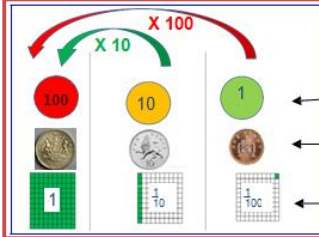

# Fairfield Primary School Calculation Policy for subtraction: Year 3

<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Informal methods to support mental Calculations</p>	<p><b>Add and subtract numbers mentally, including:</b></p> <ul style="list-style-type: none"> <li>- a three-digit number and ones</li> <li>- a three-digit number and tens</li> <li>- a three-digit number and hundreds.</li> </ul> <p><b>Use a number line, dienes, hundred squares, two-hundred squares, and similar representations, to support mental calculations.</b></p>	<p><u>Use known number facts and place value to subtract</u> Continue as in Year 2 but with appropriate numbers e.g. <math>97 - 15 = 72</math></p>  <p>With practice, children will need to record less information and decide whether to count back or forward. It is useful to ask children whether counting up or back is the more efficient for calculations such as <math>57 - 12</math>, <math>86 - 77</math> or <math>43 - 28</math>.</p> <p><u>Pencil and paper procedures</u> <u>Complementary addition</u> <math>84 - 56 = 28</math></p> 
<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Written Calculations</p>	<p><b>Subtract numbers with up to three digits, using the formal written method of columnar subtraction.</b></p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;"> <math display="block">\begin{array}{r} 87 \\ -53 \\ \hline 34 \end{array}</math> </div> <div style="text-align: center;"> <math display="block">\begin{array}{r} 356 \\ -145 \\ \hline 211 \end{array}</math> </div> <div style="text-align: center;"> <math display="block">\begin{array}{r} 51 \\ 468 \\ -259 \\ \hline 208 \end{array}</math> </div> </div>	
<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Representations to support mental and written calculations</p>	<p><b>Use physical/pictorial representations alongside columnar methods (where needed).</b></p> <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;">  <p>560-280</p> </div> <div style="border: 1px solid black; padding: 5px;"> <p><math>30 + 6</math></p> <p><math>20 + 16</math></p> <p><math>10 + 26</math></p> <p style="text-align: center;">All of these representations still comprise the amount of 36.</p> </div> </div> <p>Introduce transition from concrete place value representations, (e.g. dienes or straws), to pictorial – such as place value counters or money.</p> <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;">  <p>132 in dienes</p> </div> <div style="text-align: center;">  <p>132 in place value counters.</p> </div> </div> <div style="border: 1px solid orange; padding: 5px; margin-top: 10px;"> <p>Revert to concrete manipulatives and expanded methods whenever difficulties arise</p> </div> <p style="text-align: center;"><b>Partitioning and re-partitioning supports the understanding of place-value.</b></p>	
<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Fractions</p>	<p>-Count up and down in tenths</p> <p>-Subtract fractions with the same denominator within one whole</p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;"> <p>Adding Fractions</p> <p>Bar model</p>  </div> <div style="border: 1px solid black; padding: 5px;"> <math display="block">\frac{1}{6} + \frac{1}{6} + \frac{1}{6} = \frac{3}{6} = \frac{1}{2}</math> </div> </div>	
<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Links from other strands</p>	<p>-</p> <p>-Money and calculating duration of events (with number lines.) For example: <i>“Add and subtract amounts of money to give change, using both £ and p in practical contexts.”</i></p> <p>-Compare durations of events [for example to calculate the time taken by particular events or tasks].</p>	

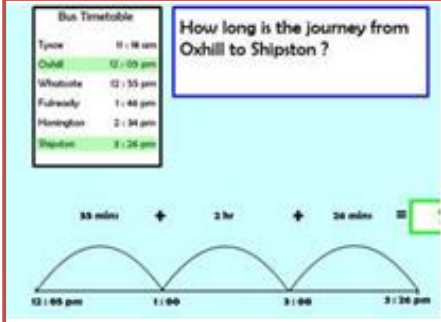
# Fairfield Primary School Calculation Policy for subtraction: Year 4

<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Informal mental Calculations to support</p>	<p><b>Continue to practise mental methods with increasingly large numbers to aid fluency.</b> (From Non-Statutory Guidance).</p> <p>Methods to support fluent calculation and encourage efficiency of method: Find a difference by counting up. E.g. 5003—4996</p> <p>Subtract nearest multiple of ten and adjust Partition larger numbers</p>	<p>This could be done on an empty number line. Children should recall and use number facts to reduce the number of steps.</p>  <p>Use known number facts and place value to subtract <math>92 - 25 = 67</math></p>
<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Written Calculations</p>	<p><b>Subtract numbers with up to 4 digits using the formal written method of columnar subtraction.</b></p> <p>Build on formal, extended method (See Year 3) using exchange wherever necessary. Continue to use representations and manipulatives to develop understanding of place value.</p> <p>Apply understanding of subtraction with larger integers to that of decimals in context of money and measures (See Y5).</p>	
<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Representations to support mental and written calculations</p>	<p><b>Use physical/pictorial representations alongside expanded and columnar methods.</b> Dienes blocks can be used to model calculations and under-lying place value concepts.</p>  <p>Ask: what is the same and what is different about all these methods? Compare and discuss the suitability of different methods in context. Pupils decide which operations and methods to use and why.</p>	
<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Fractions</p>	<ul style="list-style-type: none"> <li>- Count up and down in hundredths.</li> <li>- Subtract fractions with the same denominator.</li> <li>- Solve simple measure and money problems involving fractions and decimals to two decimal places.</li> <li>- Subtract fractions with mixed denominators using the butterfly method (see addition Y4).</li> </ul>	
<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Links from other strands</p>	<ul style="list-style-type: none"> <li>- Identify, represent and estimate numbers using different representations. (Place value)</li> <li>- Recognise the place value of each digit in a four-digit number.</li> <li>- Estimate and use inverse operations to check answers to a calculation.</li> <li>- Solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why.</li> <li>- Estimate, compare and calculate different measures, including money in pounds and pence.</li> </ul>	

# Fairfield Primary School Calculation Policy for subtraction: Year 5

<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Informal methods to support mental Calculations</p>	<ul style="list-style-type: none"> <li>- Subtract numbers mentally with increasingly large numbers. <i>E.g.</i> <math>12,462 - 2,300 = 10,162</math></li> <li>- Use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy.</li> <li>- Pupils practise subtracting decimals, including a mix of whole numbers and decimals, decimals with different numbers of decimal places, and complements of 1 (<i>for example</i>, <math>1 - 0.17 = 0.83</math>).</li> <li>- Pupils mentally subtract tenths, and one-digit whole numbers and tenths.</li> </ul> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p style="text-align: center;"><b>Children use, or visualise, representation of choice. Refer back to physical representations as required.</b></p> </div> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p><b>Basic Mental Strategies for Subtraction</b>              Find differences by counting up              Partitioning              Applying known facts              Bridging through 10 and multiples of 10              Subtracting 9, 11 etc. by compensating              Counting on to, or back from the largest number</p> <p style="text-align: right;"><i>National Curriculum 1999</i></p> </div>															
<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Written Calculations</p>	<p>Subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction).</p> <p><i>Pupils practise adding and subtracting decimals.</i>              Begin with three-digit numbers using formal, columnar method; then move into four-digit numbers.</p> <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <p style="text-align: center;"><math>£17.34 - £12.16</math></p> </div> <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: right; padding-right: 10px;"> <math display="block">\begin{array}{r} 1000+700+20+14p \\ - 1000+200+10+ 6p \\ \hline 500+10+ 8p \end{array}</math> </td> <td style="text-align: center; padding: 0 10px;">→</td> <td style="text-align: center; padding: 0 10px;"> <table style="border: 1px solid black; background-color: yellow; margin: auto;"> <tr><td style="text-align: center;">1</td></tr> <tr><td style="text-align: center;">1734p</td></tr> <tr><td style="text-align: center;">- 1216p</td></tr> <tr><td style="text-align: center;">-----</td></tr> <tr><td style="text-align: center;">518p</td></tr> </table> </td> <td style="text-align: center; padding: 0 10px;">→</td> <td style="text-align: left;"> <table style="border-collapse: collapse;"> <tr><td style="text-align: right; padding-right: 5px;">£ 2</td></tr> <tr><td style="text-align: right;">17.34</td></tr> <tr><td style="text-align: right;">- 12.16</td></tr> <tr><td style="text-align: right;">-----</td></tr> <tr><td style="text-align: right;">5.18</td></tr> </table> </td> </tr> </table></div> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p style="text-align: center;">Relate place value of decimals with that of whole numbers using representations (See below).</p> </div>	$\begin{array}{r} 1000+700+20+14p \\ - 1000+200+10+ 6p \\ \hline 500+10+ 8p \end{array}$	→	<table style="border: 1px solid black; background-color: yellow; margin: auto;"> <tr><td style="text-align: center;">1</td></tr> <tr><td style="text-align: center;">1734p</td></tr> <tr><td style="text-align: center;">- 1216p</td></tr> <tr><td style="text-align: center;">-----</td></tr> <tr><td style="text-align: center;">518p</td></tr> </table>	1	1734p	- 1216p	-----	518p	→	<table style="border-collapse: collapse;"> <tr><td style="text-align: right; padding-right: 5px;">£ 2</td></tr> <tr><td style="text-align: right;">17.34</td></tr> <tr><td style="text-align: right;">- 12.16</td></tr> <tr><td style="text-align: right;">-----</td></tr> <tr><td style="text-align: right;">5.18</td></tr> </table>	£ 2	17.34	- 12.16	-----	5.18
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<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Representations to support mental and written calculations</p>	<p>Use physical/pictorial representations to stress the place value relationships between money, decimals and whole numbers.</p> <p>A place value mat such as this one could be used, moving away from the traditional: <i>Hundreds, tens and ones</i> model used in Lower KS2 and KS1.</p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">  <p>Integers Money Decimals</p> </div> <div style="text-align: center;">  </div> </div>															
<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Fractions</p>	<ul style="list-style-type: none"> <li>- Subtract fractions with the same denominator and denominators that are multiples of the same number. (<i>Include fractions exceeding 1 as a mixed number.</i>)</li> <li>- Solve problems involving number up to three decimal places.</li> <li>- Children mentally subtract tenths, and one-digit whole numbers and tenths.</li> </ul>															
<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Links from other strands</p>	<ul style="list-style-type: none"> <li>- Solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign.</li> <li>- Use all four operations to solve problems involving time, money and measure using decimal notation (up to 3d.p).</li> </ul>															

# Fairfield Primary School Calculation Policy for subtraction: Year 6

<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Informal methods to support mental Calculations</p>	<p>Children:</p> <ul style="list-style-type: none"> <li>- Perform mental calculations, including with mixed operations and large numbers.</li> <li>- Use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy.</li> <li>- <i>They undertake mental calculations with increasingly large numbers and more complex calculations.</i></li> </ul> <div style="border: 1px solid black; padding: 5px; text-align: center;"> <p>Children draw on basic, mental subtraction strategies, (See Y5).              Children use, or visualise, representation of choice.              Refer back to physical representations (when required).</p> </div>
<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Written Calculations</p>	<p><b>Add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction).</b></p> <p>Solve problems involving the calculation and conversions of units of measure, using decimal notation of up to three decimal places where appropriate. (MEASURES)</p> <div style="border: 1px solid black; padding: 5px; text-align: center;"> <p>Move towards consolidation of formal, columnar method.              For more complex calculations, with increasingly larger or smaller numbers, compare representations and expanded algorithms alongside columnar methods. <i>Ask: What is the same? What's different?</i>              Compare and discuss the suitability of different methods, (mental or written), in context.              Revert to expanded methods whenever difficulties arise.</p> </div> <div style="display: flex; justify-content: space-around; align-items: flex-start;"> <div style="border: 1px solid black; padding: 5px; text-align: center;"> <p>932 - 457 becomes</p> <math display="block">\begin{array}{r} 8 \quad 12 \quad 1 \\ 9 \quad 3 \quad 2 \\ - 4 \quad 5 \quad 7 \\ \hline 4 \quad 7 \quad 5 \end{array}</math> </div> <div style="border: 1px solid black; padding: 5px; text-align: center;"> <math display="block">\begin{array}{r} 1 \quad 8 \quad 6 \quad 7 \quad 10 \quad 1 \quad 1 \\ - 5 \quad 4 \quad 5 \quad 6 \\ \hline 1 \quad 3 \quad 2 \quad 5 \quad 5 \end{array}</math> </div> <div style="border: 1px solid black; padding: 5px; text-align: center;"> <math display="block">\begin{array}{r} 1 \quad 7 \quad 8 \quad 9 \quad 10 \quad 1 \quad 1 \\ - 5 \quad 4 \quad 5 \quad 6 \\ \hline 1 \quad 2 \quad 5 \quad 5 \quad 5 \end{array}</math> </div> </div> <p>Consolidate columnar methods, paying particular attention to the occurrence of zeros as place holders.</p>
<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Representations to support mental and written calculations</p>	<p><b>Use physical/pictorial representations alongside columnar methods (where needed).</b>  <i>Ask: What is the same, what is different?</i></p> <div style="border: 1px solid black; padding: 5px;">  </div>
<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Fractions</p>	<ul style="list-style-type: none"> <li>- Subtract fractions with different denominators and mixed numbers.</li> <li>- Children practise calculations with simple fractions and decimal fraction equivalents to aid fluency.</li> </ul>
<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Links from other strands</p>	<ul style="list-style-type: none"> <li>-Use their knowledge of the order of operations to carry out calculations involving the four operations (BIDMAS)</li> <li>-Solve problems involving all four operations.</li> <li>-Algebra: use symbols and letters to represent variable and unknowns e.g. <math>a + b = b + a</math></li> <li>-Using the number line, pupils use, add and subtract positive and negative integers for measures such as temperature.</li> </ul>


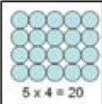
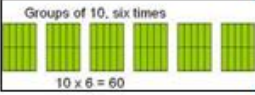
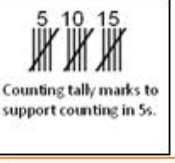

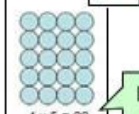
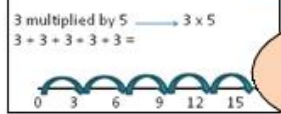
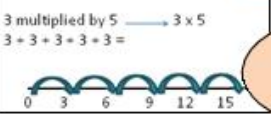
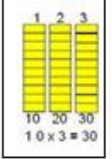
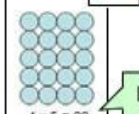
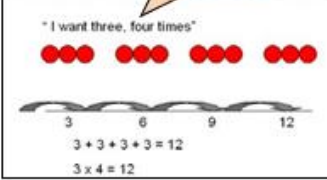
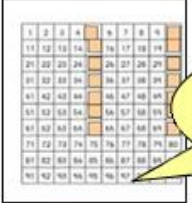
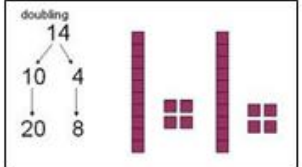



# Fairfield Primary School Calculation Policy for multiplication: Year 1

<p style="writing-mode: vertical-rl; transform: rotate(180deg);"><b>Informal methods to support mental Calculations</b></p>	<p><b>Solve one-step problems involving multiplication and division, by calculating the answer using concrete objects, pictorial representations and arrays with the support of the teacher.</b></p> <p><b>Count in multiples of twos, fives and tens</b> with equipment, songs, rhythms and including by rote</p> <p>Counting 2s e.g. counting socks, shoes, animal legs...</p> <p>Counting in 5s e.g. counting fingers, fingers in gloves, toes ...</p> <p>Counting in 10s e.g. counting fingers, toes ...</p> <p>Doubles up to 10.</p> <p>Recognising odd and even numbers</p> <p>Write as a number pattern (e.g. 5, 10, 15...; 2, 4, 6...; 10, 20, 30...)</p> <div style="text-align: right;"> </div>
<p style="writing-mode: vertical-rl; transform: rotate(180deg);"><b>Written Calculations</b></p>	<div style="border: 1px solid red; padding: 5px;"> <p><b>It is important to use a range of models to develop understanding of multiplication, and that children make connections between arrays, number patterns, and counting in twos, fives and tens</b></p> </div> <div style="border: 1px solid red; padding: 5px; margin-left: 200px;"> <p>Although there is no statutory requirement for written multiplication in Year 1, it may be helpful to encourage children to begin to write it as a repeated addition sentence in preparation for Year 2</p> <p>E.g. <math>2 + 2 + 2 + 2 = 8</math></p> </div>
<p style="writing-mode: vertical-rl; transform: rotate(180deg);"><b>Representations to support mental and written calculations</b></p>	<p style="text-align: center;"><b>Use a range of concrete and pictorial representations, including:</b></p> <div style="display: flex; flex-wrap: wrap; justify-content: space-around;"> <div style="border: 1px solid black; padding: 5px; width: 30%;"> <p>There are 3 sweets in one bag. How many sweets are there in 5 bags?</p> </div> <div style="border: 1px solid black; padding: 5px; width: 30%;"> <p>4 groups of 3 3 groups of 4</p> </div> <div style="border: 1px solid black; padding: 5px; width: 30%;"> <p>Lots of the 'same thing'</p> <p>Bead Bar</p> <p>Number Line</p> <p>Fingers</p> </div> <div style="border: 1px solid black; padding: 5px; width: 30%;"> <p>2 groups of 5 (5 x 2) using Numicon</p> </div> <div style="border: 1px solid black; padding: 5px; width: 30%;"> <p>4 groups of 2p 2p multiplied by 4 <math>2p \times 4 = 8p</math></p> </div> <div style="border: 1px solid black; padding: 5px; width: 30%;"> <p><math>3 + 3 + 3 + 3 = 12</math> 3 multiplied by 4 is 12 <math>3 \times 4 = 12</math></p> </div> <div style="border: 1px solid black; padding: 5px; width: 30%;"> <p><math>4 \times 3 = 12</math> "4 cakes, 3 times" 4 multiplied by 3</p> </div> <div style="border: 1px solid black; padding: 5px; width: 30%;"> <p>Double 4 in hoops</p> </div> <div style="border: 1px solid black; padding: 5px; width: 30%;"> <p>5 10 15</p> </div> </div>
<p style="writing-mode: vertical-rl; transform: rotate(180deg);"><b>Links from other strands</b></p>	<ul style="list-style-type: none"> <li>- Count in multiples of twos, fives and tens (from Number and place value), as above.</li> <li>- Counting in twos, five and tens from different multiples to develop their recognition of patterns in the number system.</li> <li>- They discuss and solve problems in familiar practical contexts, including using quantities.</li> </ul>



# Fairfield Primary School Calculation Policy for multiplication: Year 2

<p style="writing-mode: vertical-rl; transform: rotate(180deg);"><b>Informal methods to support mental Calculations</b></p>	<ul style="list-style-type: none"> <li>-Recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, connecting the 2, 5 and 10 multiplication tables to each other.</li> <li>-Connect the 10 multiplication table to place value.</li> <li>- Recognise odd and even numbers.</li> <li>- Show that multiplication of two numbers can be done in any order (commutative).</li> <li>- Use a variety of language to describe multiplication and division.</li> <li>-Apply doubling of numbers up to ten to doubling larger numbers.</li> </ul> <div data-bbox="1002 271 1347 501" style="border: 1px solid black; border-radius: 50%; padding: 10px; width: fit-content; margin-left: auto; margin-right: auto;"> <p>I know that the multiples of 2/5/10 are always/never ....</p> </div>
<p style="writing-mode: vertical-rl; transform: rotate(180deg);"><b>Written Calculations</b></p>	<p><b>Calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication (x), division (÷) and equals (=) signs.</b></p> <p>Begin to use other multiplication tables and recall facts to perform written calculations.</p> <p>Use a range of materials and contexts ... including arrays and repeated addition.</p> <div data-bbox="1147 629 1386 882" style="border: 1px solid black; padding: 5px; width: fit-content; margin-left: auto; margin-right: auto;"> <math display="block">7 \times 2 = \square</math> <math display="block">7 \times \square = 14</math> <math display="block">\square \times 2 = 14</math> <math display="block">\triangle \times \square = 14</math> </div>
<p style="writing-mode: vertical-rl; transform: rotate(180deg);"><b>Representations to support mental and written calculations</b></p>	<p>Use a range of concrete and pictorial representations, including:</p> <div style="display: flex; flex-wrap: wrap;"> <div style="width: 50%;">  <p>Counting 5 minute intervals</p> </div> <div style="width: 50%;">  <p><math>5 \times 4 = 20</math></p> </div> <div style="width: 50%;">  <p>Groups of 10, six times <math>10 \times 6 = 60</math></p> </div> <div style="width: 50%;">  <p>Counting tally marks to support counting in 5s.</p> </div> <div style="width: 50%;">  <p>I want five, four times</p> </div> <div style="width: 50%;">  <p>I want four, five times</p> </div> <div style="width: 50%;">  <p>3 multiplied by 5 <math>3 + 3 + 3 + 3 + 3 =</math></p> </div> <div style="width: 50%;">  <p>3 multiplied by 4</p> </div> <div style="width: 50%;">  <p>What arrays can you make with 20 counters?</p> </div> <div style="width: 50%;">  <p>I want three, four times</p> </div> <div style="width: 50%;">  <p>"I want three, four times"</p> </div> <div style="width: 50%;">  <p>What do you notice about the numbers covered up? Is there a pattern? What number is next?</p> </div> <div style="width: 50%;">  <p>doubling</p> </div> <div style="width: 50%;">  <p><math>10 + 10 = 2 + 2 + 2 + 2 + 2 + 2 + 2 + 2 + 2 + 2</math> <math>5 + 5 + 5 + 5 = 4 + 4 + 4 + 4</math></p> </div> </div>
<p style="writing-mode: vertical-rl; transform: rotate(180deg);"><b>Fractions</b></p>	<ul style="list-style-type: none"> <li>-Write simple fractions for example, <math>1/2</math> of <math>6 = 3</math> and recognise the equivalence of <math>2/4</math> and <math>1/2</math>.</li> <li>-Begin to relate multiplication and division models to fractions and measures.</li> </ul>
<p style="writing-mode: vertical-rl; transform: rotate(180deg);"><b>Links from other strands</b></p>	<ul style="list-style-type: none"> <li>-Solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts.</li> <li>-Use commutativity and inverse relations to develop multiplicative reasoning (e.g. <math>4 \times 5 = 20</math> and <math>20 \div 5 = 4</math>).</li> <li>-Statistics—interpret and construct simple pictograms, tally charts and block diagrams.</li> <li>-Measurement— counting 5 minute intervals on a clock face.</li> <li>-Place value count in steps of 2, 3 and 5 from 0 and in tens from any number, forwards and backwards.</li> </ul>

# Fairfield Primary School Calculation Policy for multiplication: Year 3

Informal methods to support mental Calculations

-Recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables (and 2, 5 and 10 multiplication tables from Y2).

-Use doubling to connect 2, 4 and 8 multiplication tables.  
-Develop efficient mental methods using commutativity and associativity.

-Derive related multiplication and division facts.

-Calculate mathematical statements for multiplication using the multiplication tables that they know, including for two-digit numbers times one-digit numbers, using mental methods.

-Partitioning: multiply the tens first and then multiply the units, e.g.  $57 \times 6 = (50 \times 6) + (7 \times 6) = 300 + 42 = 342$

-Children can apply these skills to solve spoken word problems too, include missing number statements e.g.

$$72 \div \square = 8$$

Ensure opportunities to learn multiplication tables through use of visual models, images and also rote learning.

**The associative law:**  
 $4 \times 12 \times 5 = 4 \times 5 \times 12$   
 $= 20 \times 12$   
 $= 240$

**The commutative law:**  
 $4 \times 12 = 12 \times 4$

**Multiplication and division facts:**  
 $8 \times 4 = 32, 4 \times 8 = 32, 32 \div 4 = 8, 32 \div 8 = 4$

**Deriving related facts:**  
 $3 \times 2 = 60, 6 \div 3 = 2, 6 \div 2 = 3$   
 $\rightarrow 30 \times 2 = 60, 60 \div 3 = 20, 20 = 60 \div 3$

Written Calculations

Write and calculate mathematical statements for multiplication using the multiplication tables that they know, including for two-digit numbers times one-digit numbers, progressing to formal written methods.

Estimate before calculating

Ensure written methods build on/relate to mental methods

Towards the column method ...

x	20	4
6	120	24
120 + 24 = 144		

$$\begin{array}{r} 24 \\ \times 6 \\ \hline 120 \\ 24 \\ \hline 144 \end{array}$$

Representations to support mental and written calculations

Use physical/pictorial representations alongside columnar methods (where needed).

Ask: What is the same, what is different?

Use arrays for partitioning too.

2 digit x 1 digit number:  
e.g.  $7 \times 38 = 266$

x	30	8
7	210	56
210 + 56 = 266		

Use 3 times as tall as you  
I'm 3 metres tall.

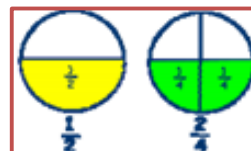
I'm only 1 metre tall.

Three times as many

Fractions

-Recognise and show, using diagrams, equivalent fractions with small denominators.

1	2	3	4	5	6	7	8	9	10
2	4	6	8	10	12	14	16	18	20
3	6	9	12	15	18	21	24	27	30
4	8	12	16	20	24	28	32	36	40
5	10	15	20	25	30	35	40	45	50



Links from other strands

- Solve problems, including missing number problems, involving multiplication, including positive integer scaling problems and correspondence problems in which n objects are connected to m objects.

- The comparison of measures includes simple scaling by integers (for example, a given quantity or measure is twice as long or five times as high). Pupils now use multiples of 2, 3, 4, 5, 8, 10, 50 and 100.

- Pupils understand and use simple scales (for example, 2, 5, 10 units per cm) in pictograms and bar charts with increasing accuracy.

# Fairfield Primary School Calculation Policy for multiplication: Year 4

<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Mental Calculations</p> <p style="writing-mode: vertical-rl; transform: rotate(180deg);">Informal methods to support</p>	<p>Recall multiplication and division facts for multiplication tables up to <math>12 \times 12</math>.</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</p> <p>Recognise and use factor pairs and commutativity in mental calculations</p> <p>Practise mental methods and extend this to three-digit numbers to derive facts, (for example <math>600 \div 3 = 200</math> can be derived from <math>2 \times 3 = 6</math>)</p>	<div style="border: 1px solid black; padding: 5px; margin-bottom: 5px;"> <p>Using the distributive law:</p> <math display="block">39 \times 7 = 30 \times 7 + 9 \times 7</math> </div> <div style="border: 1px solid black; padding: 5px; margin-bottom: 5px;"> <p>Using the associative law:</p> <math display="block">(2 \times 3) \times 4 = 2 \times (3 \times 4)</math> </div> <div style="border: 1px solid black; padding: 5px;"> <p>Using facts and rules:</p> <math display="block">2 \times 6 \times 5 = 10 \times 6 = 60</math> </div>															
<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Written Calculations</p>	<p><b>Multiply two-digit and three-digit numbers by a one-digit number using formal written layout</b></p> <ul style="list-style-type: none"> <li>- Estimate before calculating</li> <li>- Ensure written methods build on/relate to mental methods</li> <li>- Introduce alongside grid and expanded column methods:</li> </ul> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> </div>	<p><b>Key skills to support:</b></p> <ul style="list-style-type: none"> <li>- Know or quickly recall multiplication facts up to <math>12 \times 12</math>;</li> <li>- Understand the effect of multiplying numbers by 10, 100 or 1000;</li> <li>- Multiply multiples of 10, for example, <math>20 \times 40</math>;</li> <li>- Approximate, e.g. recognise that <math>72 \times 38</math> is approximately <math>70 \times 40 = 2800</math> and use this information to check whether their answer appears sensible.</li> </ul>															
<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Representations to support mental and written calculations</p>	<p><b>Use physical/pictorial representations alongside columnar methods (where needed).</b></p> <p style="text-align: center;"><i>Ask: What is the same, what is different?</i></p> <div style="display: flex; justify-content: space-between;"> <div style="width: 30%;"> <p>Ensure children can confidently multiply &amp; divide by 10 and 100, that multiplying by 10 makes the number bigger and all digits move one place to the left, while dividing by 10 makes the number smaller and all the digits move one place to the right.</p> <p>Three ways to calculate <math>7 \times 6</math>:</p> <math display="block">7 \times 6 = 7 \times 5 + 7</math> <math display="block">7 \times 6 = 7 \times 7 - 7</math> <math display="block">7 \times 6 = \square \times \square</math> <p>Now find the answer to <math>6 \times 9</math> in three different ways.</p> </div> <div style="width: 30%;"> <p>Moving digits ITP</p> </div> <div style="width: 30%;"> <p>I can use place value counters to model the grid method</p> </div> </div> <div style="margin-top: 10px;"> <p>Use arrays made with place value counters to demonstrate the link between multiplication and division. This will support understanding of the grid method.</p> </div> <div style="margin-top: 10px;"> <p>Children need to understand and apply the language of multiples and factors and use it in solving multiplication and division problems e.g.</p> <p>'All factors of 36 are multiples of 2, true or false? Find me two factors of 48 that are also multiples of 3.'</p> </div> <div style="margin-top: 10px;"> <p>Use intelligent practice e.g.</p> <table border="0"> <tr> <td><math>2 \times 3 =</math></td> <td><math>6 \times 7 =</math></td> <td><math>9 \times 8 =</math></td> </tr> <tr> <td><math>2 \times 30 =</math></td> <td><math>6 \times 70 =</math></td> <td><math>9 \times 80 =</math></td> </tr> <tr> <td><math>2 \times 300 =</math></td> <td><math>6 \times 700 =</math></td> <td><math>9 \times 800 =</math></td> </tr> <tr> <td><math>20 \times 3 =</math></td> <td><math>60 \times 7 =</math></td> <td><math>90 \times 8 =</math></td> </tr> <tr> <td><math>200 \times 3 =</math></td> <td><math>600 \times 7 =</math></td> <td><math>900 \times 8 =</math></td> </tr> </table> <p>Using the bar model to solve problems:</p> <p>Sam has 12 football cards. Sally has 6 times as many football cards as Sam. How many cards do Sally and Sam have altogether?</p> <p><math>12 \times 7 = 78</math> Altogether they have 78 football cards.</p> </div>		$2 \times 3 =$	$6 \times 7 =$	$9 \times 8 =$	$2 \times 30 =$	$6 \times 70 =$	$9 \times 80 =$	$2 \times 300 =$	$6 \times 700 =$	$9 \times 800 =$	$20 \times 3 =$	$60 \times 7 =$	$90 \times 8 =$	$200 \times 3 =$	$600 \times 7 =$	$900 \times 8 =$
$2 \times 3 =$	$6 \times 7 =$	$9 \times 8 =$															
$2 \times 30 =$	$6 \times 70 =$	$9 \times 80 =$															
$2 \times 300 =$	$6 \times 700 =$	$9 \times 800 =$															
$20 \times 3 =$	$60 \times 7 =$	$90 \times 8 =$															
$200 \times 3 =$	$600 \times 7 =$	$900 \times 8 =$															
<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Fractions</p>	<ul style="list-style-type: none"> <li>-Recognise and show, using diagrams, families of common equivalent fractions</li> <li>-Understand the relation between non-unit fractions and multiplication and division of quantities, with particular emphasis on tenths and hundredths.</li> <li>-Make connections between fractions of a length, of a shape and as a representation of one whole or set of quantities.</li> <li>-Use factors and multiples to recognise equivalent fractions and simplify where appropriate.</li> </ul> <div style="display: flex; align-items: center; margin-top: 10px;"> <div style="border: 1px solid black; padding: 5px; margin-right: 10px;"> <math display="block">\frac{4}{10} \quad \frac{6}{15} \quad \frac{8}{20} \quad \frac{10}{25} \quad \frac{12}{30} \quad \frac{14}{35} \quad \frac{16}{40}</math> </div> <div style="border: 1px solid black; padding: 5px; margin-right: 10px;"> <math display="block">\frac{2}{5} = \frac{16}{40}</math> </div> <div style="font-size: 2em; margin-right: 10px;">→</div> <div style="border: 1px solid black; padding: 5px;"> </div> </div>																
<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Links from other strands</p>	<ul style="list-style-type: none"> <li>- 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.</li> <li>- Convert between different units of measure (e.g. km to m) - using multiplication.</li> <li>- Understand the relation between non-unit fractions and multiplication/division of quantities. With particular emphasis on tenths and hundredths.</li> <li>- Relate area to arrays and multiplication.</li> <li>- Problem solving work can involve finding all possibilities and combinations drawing on knowledge of multiplication tables facts.</li> <li>- Pupils understand and use a greater range of scales in their representations (Statistics)</li> </ul>																

# Fairfield Primary School Calculation Policy for multiplication: Year 5


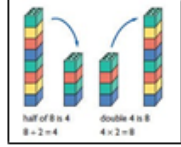

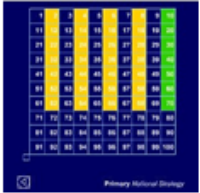
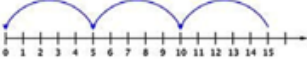

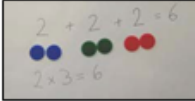

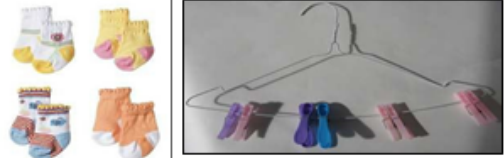
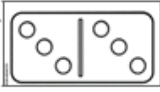
<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Informal methods to support mental Calculations</p>	<ul style="list-style-type: none"> <li>- Multiply and divide numbers mentally drawing upon known facts</li> <li>- Multiply and divide whole numbers and those involving decimals by 10, 100 &amp; 1000</li> <li>- Recognise and use square &amp; cube numbers (&amp; notation)</li> <li>- Use factors and multiples as connected ideas: 48 is a multiple of 6 and 6 is a factor of 48</li> </ul> <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <p><b>Spider diagrams</b></p> <p>To be successful at multiplying decimal numbers using a written method, children need to be completely secure in using known multiplication facts to derive linked decimal facts. Spider diagrams provide a visual way of recording these facts.</p> </div> <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <p><b>24 x 15 = ?</b></p> <p>I did: 24 x 5 = 120 (half of 24 x 10), then multiplied 120 by 3 to get 360</p> <p>I did: (24 x 10) + (24 x 5).</p> </div> <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <p><b>Example of constructing equivalence statements:</b>  <math>4 \times 35 = 2 \times 2 \times 35</math>; <math>3 \times 270 = 3 \times 3 \times 9 \times 10 = 92 \times 10</math></p> </div>
<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Written Calculations</p>	<p><b>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</b></p> <div style="border: 1px solid black; padding: 10px; margin: 10px 0;"> </div> <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <p>Compact methods for multiplication are efficient but often do not make the value of each digit explicit. When introducing multiplication of decimals, it is sensible to take children back to an expanded form such as the grid method where the value of each digit is clear, to ensure that children understand the process.</p> </div> <p style="text-align: center;"><b>Revert to expanded methods if children find formal calculation method difficult (See Y3/Y4)</b></p>
<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Representations to support mental and written calculations</p>	<p><b>Build on children's understanding: demonstrate multiplication of a decimal number alongside its whole number equivalent</b></p> <div style="display: flex; align-items: center; justify-content: center;"> <div style="text-align: center; margin-right: 20px;"> <math display="block">\begin{array}{r} 377 \\ \times 28 \\ \hline 3016 \\ 7540 \\ \hline 10,556 \end{array}</math> </div> <div style="font-size: 2em; margin-right: 20px;">→</div> <div style="text-align: center;"> <math display="block">3.77 \times 2.8 = ?</math> <math display="block">\begin{array}{r} 3.77 \text{ (2 decimal places)} \\ \times 2.8 \text{ (1 decimal place)} \\ \hline 3016 \\ +754 \\ \hline 10.556 \text{ (3 decimal places)} \end{array}</math> </div> </div>
<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Fractions</p>	<ul style="list-style-type: none"> <li>- Multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams</li> <li>- Identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths</li> </ul> <p>Pupils connect multiplication by a fraction to using fractions as operators (fractions of), and to division, building on work from previous years. This relates to scaling by simple fractions, including fractions &gt; 1.</p>
<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Links from other strands</p>	<ul style="list-style-type: none"> <li>- Identify multiples &amp; factors</li> <li>- Know and use the vocabulary of prime numbers, prime factors and composite (non-prime) numbers</li> <li>- Solve problems involving multiplication, including using their knowledge of factors and multiples, squares and cubes,</li> <li>- Solve problems involving multiplication, including scaling by simple fractions and problems involving simple rates</li> <li>- Use all four operations to solve problems involving measure [for example, length, mass, volume, money] using decimal notation, including scaling.</li> <li>- Convert between different units of metric measure; problems including money.</li> <li>- Pupils calculate the perimeter and area of shapes, including missing lengths.</li> </ul>



# Fairfield Primary School Calculation Policy for multiplication: Year 6

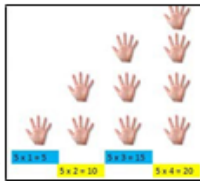







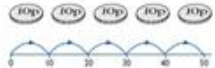
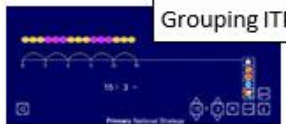




<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Informal methods to support mental Calculations</p>	<p>- Perform mental calculations, including with mixed operations and large numbers (increasingly large numbers &amp; more complex calculations)</p> <p>- Use all the multiplication tables to calculate mathematical statements in order to maintain fluency.</p> <p>- Use estimation to check answers to calculations &amp; determine, in the context of a problem, an appropriate degree of accuracy.</p> <p>- Identify the value of each digit in numbers given to three decimal places and multiply and divide numbers by 10, 100 and 1000 giving answers up to three decimal places.</p> <div style="border: 1px solid black; padding: 5px; margin: 5px;"> <p>Use mental strategies to solve problems, e.g.</p> <ul style="list-style-type: none"> <li>- x4 by doubling and doubling again</li> <li>- x5 by x10 and halving</li> <li>- x20 by x10 and doubling</li> <li>- x9 by multiplying by 10 and adjusting</li> <li>- x6 by multiplying by 3 and doubling</li> </ul> </div> <div style="border: 1px solid black; padding: 5px; margin: 5px;"> <p>What is the best approximation for <math>4.4 \times 18.6</math>?</p> </div> <div style="border: 1px solid black; padding: 5px; margin: 5px;"> <p>Children should know the square numbers up to <math>12 \times 12</math> &amp; derive the corresponding squares of multiples of 10 e.g. <math>80 \times 80 = 6400</math></p> </div> <div style="border: 1px solid black; padding: 5px; margin: 5px;"> <p>How many different <math>x/\neq</math> facts can you make using 72? 7.2? 0.72?</p> </div>														
<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Written Calculations</p>	<p><b>Multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication (short &amp; long multiplication)</b></p> <p><b>Multiply one-digit numbers with up to two decimal places by whole numbers</b></p> <p>Understand that standard written multiplication method involves a number of partial products e.g. <math>36 \times 24</math> is made up of four partial products <math>30 \times 20</math>, <math>30 \times 4</math>, <math>6 \times 20</math>, <math>6 \times 4</math>.</p> <p>Use manipulatives to support structure of the algorithm especially place value</p> <p style="text-align: center;"><b>Revert to expanded methods if children find formal calculation method difficult (See Y3/Y4)</b></p> <div style="border: 1px solid black; padding: 5px; margin: 5px;"> <table style="border-collapse: collapse; width: 100%;"> <tr><td style="text-align: right;">£</td><td style="text-align: right;">6.23</td></tr> <tr><td style="text-align: right;">x</td><td style="text-align: right;">27</td></tr> <tr><td colspan="2" style="border-top: 1px solid black;"></td></tr> <tr><td></td><td style="text-align: right;">43.61</td></tr> <tr><td></td><td style="text-align: right;"><sup>1</sup> <sup>2</sup>124.60</td></tr> <tr><td colspan="2" style="border-top: 1px solid black;"></td></tr> <tr><td style="text-align: right;">£</td><td style="text-align: right;">168.21</td></tr> </table> </div>	£	6.23	x	27				43.61		<sup>1</sup> <sup>2</sup> 124.60			£	168.21
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<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Representations to support mental and written calculations</p>	<p><b>Use physical/pictorial representations alongside columnar methods (where needed).</b> <i>Ask: What is the same, what is different?</i></p> <div style="border: 1px solid black; padding: 5px; margin: 5px; text-align: center;"> <p>Look at long-multiplication calculations containing errors, identify the errors and determine how they should be corrected</p> </div> <div style="border: 1px solid black; padding: 5px; margin: 5px;"> <p>Continue to develop children's understanding of the multiplication of a decimal number (alongside its whole number equivalent).</p> </div> <div style="border: 1px solid black; padding: 5px; margin: 5px;"> <p>Use questioning to develop conceptual understanding e.g. Which is the odd one out? <math>24 \times 3</math> <math>36 \times 4</math> <math>13 \times 5</math> <math>32 \times 2</math></p> </div> <div style="border: 1px solid black; padding: 5px; margin: 5px;"> <p><math>3.77 \times 2.8 = ?</math></p> <table style="border-collapse: collapse; width: 100%;"> <tr><td></td><td style="text-align: right;">3.77 (2 decimal places)</td></tr> <tr><td style="text-align: right;">x</td><td style="text-align: right;">2.8 (1 decimal place)</td></tr> <tr><td colspan="2" style="border-top: 1px solid black;"></td></tr> <tr><td></td><td style="text-align: right;">3016</td></tr> <tr><td></td><td style="text-align: right;">+754</td></tr> <tr><td colspan="2" style="border-top: 1px solid black;"></td></tr> <tr><td></td><td style="text-align: right;">10.556 (3 decimal places)</td></tr> </table> </div>		3.77 (2 decimal places)	x	2.8 (1 decimal place)				3016		+754				10.556 (3 decimal places)
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	10.556 (3 decimal places)														
<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Fractions</p>	<p>- Multiply pairs of proper fractions, writing the answer in its simplest form e.g. <math>\frac{1}{4} \times \frac{1}{2} = \frac{1}{8}</math></p> <p>- Multiply mixed number fractions (including whole numbers, e.g. <math>\frac{1}{4} \times 9</math>) and simplify</p> <div style="border: 1px solid black; padding: 5px; margin: 5px;"> <p>Three key applications of understanding:</p> <ul style="list-style-type: none"> <li>• Recognise that <math>\frac{1}{4}</math> of 12, <math>\frac{1}{4} \times 12</math> and 12 divided by 4 are equivalent</li> <li>• Use cancellation to simplify the product of a fraction and an integer e.g. <math>\frac{1}{4} \times 15 = 3</math>, <math>\frac{1}{4} \times 15 = 2 \times \frac{1}{4} \times 15 = 2 \times 3 = 6</math></li> <li>• Work out how many <math>\frac{1}{5}</math>s in 15, how many <math>\frac{1}{5}</math>s in 15, how many <math>\frac{2}{5}</math>s in 1 etc.</li> </ul> </div>														
<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Links from other strands</p>	<p>- Identify common factors, common multiples and prime numbers</p> <p>- Explore the order of operations using brackets; e.g., <math>2 + 1 \times 3 = 5</math> and <math>(2 + 1) \times 3 =</math></p> <p>- Fractions, decimals and percentages including equivalences in different contexts.</p> <p>- Solve problems involving the relative sizes of two quantities where missing values can be found by using integer multiplication and division facts.</p> <p>- Solve problems involving the calculation of percentages [for example, of measures, and such as 15% of 360] and the use of percentages for comparison.</p> <p>- Solve problems involving similar shapes where the scale factor is known or can be found.</p> <p>- Algebra including formulae, linear number sequences, combinations of variables.</p> <p>- Measurement including solving problems with conversion of units, decimal notation, area and volume.</p> <p>- Statistics including pie charts, line charts and calculating the mean.</p>														

# Fairfield Primary School Calculation Policy for division: Year 1


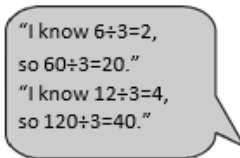
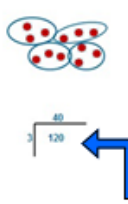
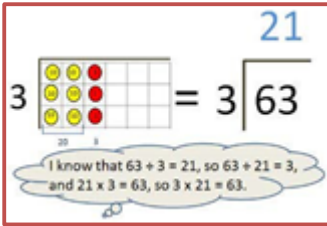
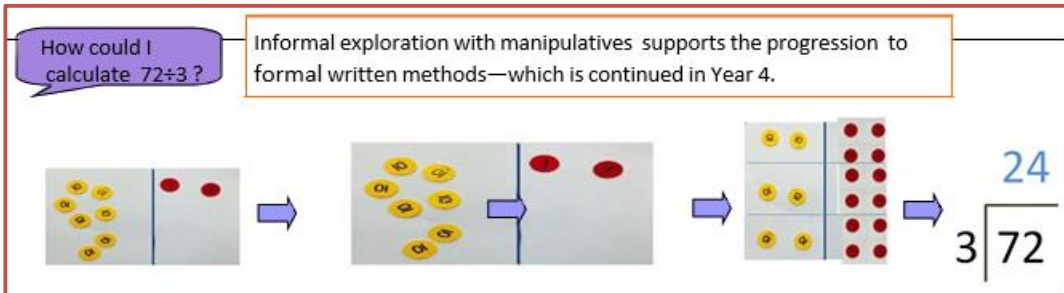

<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Informal methods to support mental Calculations</p>	<p>- Solve one-step problems involving multiplication and division, by calculating the answer using concrete objects, pictorial representations and arrays with the support of the teacher. (Pupils) make connections between arrays, number patterns, and counting in twos, fives and tens.</p>
<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Written Calculations</p>	<div style="display: flex; justify-content: space-between;"> <div style="width: 30%;">  <p>Pictorial jottings to support the calculation of <math>8 \div 4</math></p>  <p>half of 8 is 4 <math>8 \div 2 = 4</math></p> <p>double 4 is 8 <math>4 \times 2 = 8</math></p> </div> <div style="width: 40%; border: 1px solid black; padding: 5px;"> <p>Count on or back in 2s, 5s and 10s and look for patterns.</p> <p>Songs are useful for counting in steps.</p> </div> <div style="width: 25%;">    </div> </div> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p>Children should experiment with the concepts of sharing and <u>grouping</u> in a number of contexts. Initially they use their own recording—moving towards <u>fluent, symbolic notation</u> in Year 2. Conceptual <u>understanding</u> and recording should be continuously supported by the use of <b>arrays</b> as a default model, as well as other representations, (see below.)</p> </div> <div style="background-color: orange; text-align: center; padding: 5px; margin-top: 10px;"> <p>The relationship between multiplication and division must be continually considered.</p> </div>
<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Representations to support mental and written calculations</p>	<p>Use a range of concrete and pictorial representations, including: Manipulatives to support children’s own recording; and understanding of <i>sharing</i> and the link with multiplication. “How can we share 6 cakes between 2 people?”</p> <div style="display: flex; justify-content: space-between;"> <div style="width: 30%;">  <p>Here, the cakes are placed in an array formation.</p> </div> <div style="width: 30%;">  <p>How many 2 tiles can we fit on the 6 tile?</p>  </div> <div style="width: 30%; border: 1px solid black; padding: 5px;"> <p>Moving from concrete to pictorial, counters represent the cakes to reinforce the relationship between <u>multiplication</u> and division.</p> </div> </div> <p><b>Manipulatives and real-life objects to support children’s own recording; and understanding of <i>grouping</i> and the link with multiplication.</b></p> <div style="display: flex; justify-content: space-between; margin-top: 20px;"> <div style="width: 40%;">  <p>Coat hangers and socks support calculation of <math>8 \div 2</math></p> </div> <div style="width: 30%;"> <p>“Double 3 is 6. Half of 6 is 3.”</p>  </div> </div> <p>Dominoes and dice to reinforce concepts of doubling and halving.</p>
<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Fractions</p>	<ul style="list-style-type: none"> <li>- Recognise, find and name a half as one of two equal parts of an object, shape or quantity.</li> <li>- Recognise, find and name a quarter as one of four equal parts of an object, shape or quantity.</li> </ul>
<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Links from other strands</p>	<ul style="list-style-type: none"> <li>- They practise counting as reciting numbers and counting as enumerating objects, and counting in twos, fives and tens from different multiples to develop their recognition of patterns in the number system (for example, odd and even numbers). (PLACE VALUE).</li> <li>- Pupils are taught half and quarter as ‘fractions of’ by solving problems using shapes, objects and quantities. (FRACTIONS)</li> <li>- Place Value: Diene blocks and stick of 10.</li> </ul>



# Fairfield Primary School Calculation Policy for division: Year 2

<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Informal methods to support mental Calculations</p>	<p style="text-align: center; background-color: #f4a460; padding: 5px;">The relationship between multiplication and division must be continually considered.</p> <p>Recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers .</p> <p>Calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication (<math>\times</math>), division (<math>\div</math>) and equals (=) signs .</p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="background-color: #d1c4e9; padding: 5px; border: 1px solid #9c27b0;"> <p>"5, one time", "5, two times" and so on.</p> </div>   </div> 
<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Written Calculations</p>	<p>Show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot.</p> <p>Solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts. <i>(See below.)</i></p> <div style="display: flex; justify-content: space-around; align-items: center;">   <div style="text-align: center;"> <p><math>\frac{1}{2}</math> of 26 = 13</p> <p><math>26 \div 2 = 13</math></p> </div> </div> <div style="background-color: #f4a460; padding: 5px; margin-top: 10px;"> <p>Pupils decode a problem first, represent it using manipulatives and jottings; and finally record it symbolically.</p> </div> 
<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Representations to support mental and written calculations</p>	<p>Use a range of concrete and pictorial representations, including:</p> <div style="display: flex; justify-content: space-between;"> <div style="width: 30%;"> <p>Arrays</p>  <p><math>7 \times 2 = 14</math> <math>14 \div 2 = 7</math></p> </div> <div style="width: 30%;">  <p><math>2 \times 7 = 14</math> <math>14 \div 7 = 2</math></p> </div> <div style="width: 30%;"> <p>Is 14 an odd number? How do you know?</p> </div> </div> <div style="display: flex; justify-content: space-around; margin-top: 10px;"> <div style="width: 30%;"> <p>Number lines to support grouping</p>  <p><math>10p + 10p + 10p + 10p + 10p = 50p</math> <math>10p \times 5 = 50p</math> 5 hops of 10</p> </div> <div style="width: 30%;"> <p>Grouping ITP</p>  </div> <div style="width: 30%;">  </div> </div> <div style="margin-top: 10px;"> <p>Representations to support multiplicative reasoning:</p> <div style="display: flex; justify-content: space-around; align-items: center;">  <div style="background-color: #d1c4e9; padding: 5px; border: 1px solid #9c27b0; border-radius: 10px;"> <p>Using Dienes: "If <math>40 \div 10 = 4</math> and <math>30 \div 10 = 3</math>, what do you think <math>70 \div 10</math> would be? Why?"</p> </div>  </div> </div> <div style="margin-top: 10px;"> <p>"How many groups of 5 minutes have passed when the minute hand reaches twenty past?"</p> </div> 
<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Fractions</p>	<ul style="list-style-type: none"> <li>- Recognise, find, name and write fractions, <math>\frac{1}{4}</math>, <math>\frac{3}{4}</math>, <math>\frac{2}{4}</math> of a length, shape, set of objects or quantity.</li> <li>- Write simple fractions for example, <math>\frac{1}{2}</math> of 6 = 3 and recognise the equivalence of <math>\frac{1}{2}</math> and <math>\frac{2}{4}</math>.</li> </ul>
<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Links from other strands</p>	<ul style="list-style-type: none"> <li>- Count in steps of 2, 3, and 5 from 0, and in tens from any number, forward and backward.</li> <li>- Recognise the place value of each digit in a two-digit number (tens, ones) (PLACE VALUE).</li> <li>- Tell and write the time to five minutes, including quarter past/to the hour and draw the hands on a clock face to show these times, (MEASURES).</li> </ul>

# Fairfield Primary School Calculation Policy for division: Year 3

Informal methods to support mental Calculations	<p>Pupils should be taught to recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables.</p> <p><i>Pupils continue to practise their mental recall of multiplication tables... in order to improve fluency.</i></p> <p><i>Pupils develop efficient mental methods, for example, using commutativity and associativity (e.g., <math>4 \times 12 \times 5 = 4 \times 5 \times 12 = 20 \times 12 = 240</math>) and multiplication and division facts to derive related facts.</i></p> <div style="text-align: right;"> <math>36 \div 3 = 12</math>  <math>30 \quad 6</math>  <math>30 \div 3 = 10 \quad 6 \div 3 = 2</math>   </div>
Written Calculations	<p>Pupils should be taught to:</p> <p>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.</p> <p>Solve problems, including missing number problems, involving multiplication and division, including positive integer scaling problems and correspondence problems in which n objects are connected to m objects, (see <a href="#">Links from other strands</a>, below.)</p> <div style="float: right; text-align: center;">  <div style="display: flex; flex-direction: column; align-items: center;"> <math>120 \div 3</math>   </div> </div> <div style="text-align: right; background-color: #f4a460; padding: 5px; margin-top: 10px;"> <p>New written methods can be modelled alongside mental or informal methods to ensure understanding.</p> </div>
Representations to support mental and written calculations	<p style="text-align: center;">Use a range of concrete and pictorial resources, including:</p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="border: 1px solid gray; border-radius: 50%; padding: 10px; text-align: center;"> <p><math>63 \div 3</math> equals three groups of 2 tens and a one.</p> </div> <div style="border: 1px solid gray; padding: 5px;">  </div> </div> <div style="margin-top: 20px;"> <p>How could I calculate <math>72 \div 3</math> ?</p> <p>Informal exploration with manipulatives supports the progression to formal written methods—which is continued in Year 4.</p> <div style="text-align: center;">  </div> </div>
Fractions	<ul style="list-style-type: none"> <li>-Recognise that tenths arise from dividing an object into 10 equal parts and in dividing one-digit numbers or quantities by 10.</li> <li>-Recognise and show, using diagrams, equivalent fractions with small denominators.</li> <li>-Recognise, find and write fractions of a discrete set of objects:</li> </ul> <p><i>unit fractions and non-unit fractions with small denominators</i></p> <div style="text-align: right;">  </div>
Links from other strands	<ul style="list-style-type: none"> <li>- Pupils solve simple problems in contexts, including measuring and scaling contexts, (e.g., four times as high etc.) and correspondence problems.</li> </ul>

# Fairfield Primary School Calculation Policy for division: Year 4

<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Informal methods to support mental Calculations</p>	<p><b>Pupils should be taught to:</b></p> <ul style="list-style-type: none"> <li>- Recall multiplication and division facts for multiplication tables up to <math>12 \times 12</math>; 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</li> <li>- Recognise and use factor pairs and commutativity in mental calculations</li> </ul> <div style="border: 1px solid black; padding: 5px; text-align: center; margin: 10px auto; width: fit-content;"> <p>I know that <math>6 \div 3 = 2</math>, So. <math>600 \div 3 = 200</math></p> </div>
<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Written Calculations</p>	<p><b>Pupils should be taught to:</b></p> <ul style="list-style-type: none"> <li>- Divide two-digit and three-digit numbers by a one-digit number <b>using formal written layout (bus stop division)</b></li> <li>- 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.</li> </ul> <div style="border: 1px solid black; padding: 5px; margin: 10px auto; width: fit-content;"> <math display="block">186 \div 6 = 31</math> </div> <p><i>Pupils practise to become fluent in the formal written method of short multiplication and short division with exact answers.</i></p> <p style="text-align: center;"><b>Revert to expanded methods if children find formal calculation method difficult</b></p>
<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Representations to support mental and written calculations</p>	<p><b>Use physical/pictorial representations alongside columnar methods (where needed).</b></p> <div style="display: flex; align-items: center;"> <div style="border: 1px solid black; padding: 5px; margin-right: 10px;"> <math>200 \div 6 = 33 \text{ r.} 2</math> </div> <div style="border: 1px solid black; padding: 10px; flex-grow: 1;"> <p style="text-align: center;"><b>By the end of Year 4, children need to have encountered remainders in a number of contexts. Pupils can be introduced to remainders using known facts: e.g. <math>13 \div 4</math>; then progress to larger numbers.</b></p> </div> </div> <div style="border: 1px solid black; padding: 10px; margin-top: 10px; text-align: center;"> <p><b>By working through larger number calculations with manipulatives, children gain experience of exchange (re-partitioning) within division algorithms.</b></p> </div>
<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Fractions</p>	<p><b>Pupils should be taught to:</b></p> <ul style="list-style-type: none"> <li>- Recognise and show, using diagrams, families of common equivalent fractions</li> <li>- Recognise that hundredths arise when dividing an object by one hundred and dividing tenths by ten.</li> <li>- Solve problems involving increasingly harder fractions to calculate quantities, and fractions to divide quantities, including non-unit fractions where the answer is a whole number.</li> <li>- 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.</li> </ul> <div style="border: 1px solid black; padding: 5px; margin: 10px auto; width: fit-content;"> </div>
<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Links from other strands</p>	<ul style="list-style-type: none"> <li>- Convert between different units of measure [for example, kilometre to metre; hour to minute]</li> <li>- Estimate, compare and calculate different measures, including money in pounds and pence (MEASURES)</li> <li>- Recognise that hundredths arise when dividing an object by one hundred and dividing tenths by ten (FRACTIONS)</li> </ul>

# Fairfield Primary School Calculation Policy for division: Year 5

Informal methods to support mental Calculations

**Pupils should be taught to:**

- Multiply and divide whole numbers and those involving decimals by 10, 100 and 1000
- Multiply and divide numbers mentally drawing upon known facts
- Identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers.

**Pupils apply all the multiplication tables and related division facts frequently and use them confidently.**

Written Calculations

**Pupils practise and extend their use of the formal written methods of short division.**

- 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.

**Pupils interpret non-integer answers to division by expressing results in different ways according to the context, including with remainders, as fractions, as decimals or by rounding (See Representations below).**

**Pupils practise and extend their use of the formal written methods of long division.**

Encourage children to use trial and error or 'helping sums' when working through long division.

**Revert to expanded methods if children find formal calculation method difficult**

**Use physical/pictorial representations alongside columnar methods (where needed).**

Representations to support mental and written calculations

Fractions

**Pupils should be taught to:**



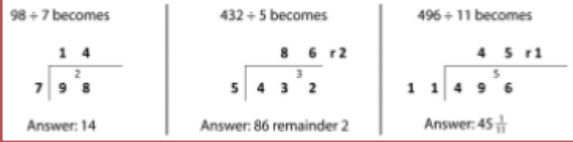
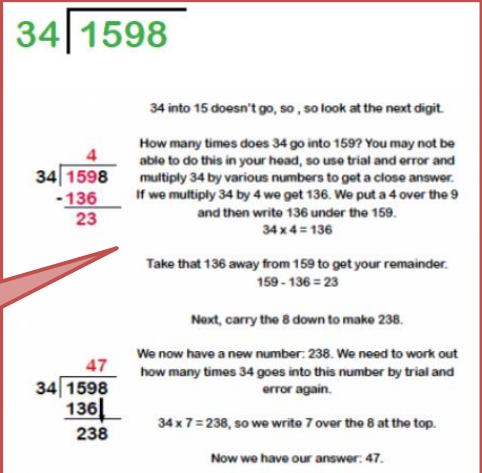
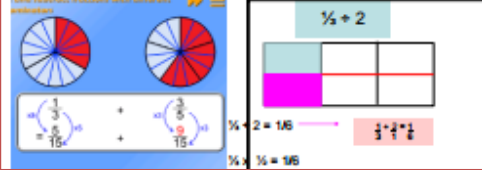
- Recognise mixed numbers and improper fractions and convert from one form to the other and write mathematical statements  $> 1$  as a mixed number.
- Pupils connect equivalent fractions  $> 1$  that simplify to integers with division and other fractions  $> 1$  to division with remainders.
- Pupils connect multiplication by a fraction to using fractions as operators (fractions of), and to division.
- Pupils should make connections between percentages, fractions and decimals.

Links from other strands

- Pupils use all four operations in problems involving time and money, including conversions. ....using decimal notation, including scaling.
- Calculate and compare the area of rectangles (including squares). (MEASURES)



# Fairfield Primary School Calculation Policy for division: Year 6

<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Informal methods to support mental Calculations</p>	<p><b>Pupils should be taught to:</b></p> <ul style="list-style-type: none"> <li>- Perform mental calculations, including with mixed operations and large numbers.</li> <li>- Use their knowledge of the order of operations to carry out calculations involving the four operations.</li> <li>- Identify common factors, common multiples and prime numbers.</li> </ul> <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <p><i>I know that 366 will divide by 6 because it has 2 and 3 as factors</i></p> </div> <ul style="list-style-type: none"> <li>• Solve problems involving addition, subtraction, multiplication and division</li> <li>• use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy.</li> </ul>  
<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Written Calculations</p>	<p><b>Divide numbers up to 4 digits by a two-digit whole number using the formal written method of long division, and interpret remainders as whole number remainders, fractions, or by rounding, as appropriate for the context</b></p> <p>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.</p> <p><i>Pupils practise division for larger numbers, using the formal written methods of short and long division.</i></p> <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <p>Encourage children to use trial and error or 'helping sums' when working through long division.</p> </div>  <div style="border: 1px solid black; padding: 10px; margin: 10px 0;"> <p><b>34   1598</b></p> <p>34 into 15 doesn't go, so, so look at the next digit.</p> <p>How many times does 34 go into 159? You may not be able to do this in your head, so use trial and error and multiply 34 by various numbers to get a close answer. If we multiply 34 by 4 we get 136. We put a 4 over the 9 and then write 136 under the 159.</p> <p>34 x 4 = 136</p> <p>Take that 136 away from 159 to get your remainder. 159 - 136 = 23.</p> <p>Next, carry the 8 down to make 238.</p> <p>We now have a new number: 238. We need to work out how many times 34 goes into this number by trial and error again.</p> <p>34 x 7 = 238, so we write 7 over the 8 at the top.</p> <p>Now we have our answer: 47.</p>  </div> <p><b>Revert to expanded methods if children find formal calculation method difficult</b></p>
<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Representations to support mental and written calculations</p>	<p><b>Use physical/pictorial representations alongside columnar methods (where needed).</b></p> <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <p><math>£1362.72 \div 40 = ?</math></p> <p><math>£1362.72 \div 4 = £340.68</math> [½ and ½ again.]</p> <p><math>£340.68 \div 10 = £34.068</math> which rounds to <math>£34.07</math>.</p> </div> <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <p>To introduce the long division model, use a calculation which can be represented both with manipulatives and by a short division algorithm. Use questioning and discussion to compare written methods.</p> </div>
<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Fractions</p>	<p><b>Pupils should be taught to:</b></p> <ul style="list-style-type: none"> <li>- Use common factors to simplify fractions</li> <li>- Compare and order fractions, including fractions &gt;1</li> <li>- Divide proper fractions by whole numbers [for example, <math>1/3 \div 2 = 1/6</math>].</li> <li>- Associate a fraction with division and calculate decimal fraction equivalents [for example, 0.375].</li> </ul> <p><i>Pupils use their understanding of the relationship between unit fractions and division to work backwards. Use written division methods in cases where the answer has up to 2 dp.</i></p>  <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <p>2/5 of a number is 20. What is the number?</p> <p>10 10 10 10 10 Whole=50 20</p> </div>
<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Links from other strands</p>	<ul style="list-style-type: none"> <li>- Introduced the division of decimal numbers by one-digit whole number, initially, in practical contexts involving measures and money.</li> <li>- They recognise division as the inverse of multiplication.</li> <li>- Pupils also develop their skills of rounding and estimating. This includes rounding answers to a specified degree of accuracy and checking the reasonableness of their answers.</li> <li>- Solve problems involving conversion of units of measure (use decimal notation up to 3d.p).</li> <li>- Use, read, write and convert between standard units, using decimal notation to up to 3d.p.</li> <li>- Interpret and construct pie charts and line graphs and use these to solve problems.</li> <li>- Calculate and interpret the mean as an average. (STATISTICS)</li> <li>- Solve problems involving the relative sizes of two quantities. (RATIO AND PROPORTION)</li> </ul>

