

**Progression of methods to go alongside Thomas Buxton Primary School Calculation Policy**

Operation	Vocabulary	Mental Methods (informal) <i>If children only need to do one jump on a numberline, they don't need to record their thinking through jottings</i>	Written Methods (formal)
<b>Addition</b>	<ul style="list-style-type: none"> <li>• Deconstruct</li> <li>• Partition</li> <li>• Boundary number</li> </ul>	<p><b>Count up</b> - when the number added does not cross a boundary number</p> <p><b>Near doubles</b> - e.g. 63 + 61</p> <p><b>Partition the 2<sup>nd</sup> number ONLY</b> - adding 2d or 3d numbers</p> <p><b>Compensation</b> - when the number added ends in 8 or 9</p> <p><b>Bridging</b> - when the number added takes you over a boundary number</p> <p><b>Refined number line</b> - steps on a number line written as calculations rather than as a jotting</p> <p><b>Images:</b> 100 square (snakes and ladders set up), beadstring, 100 square with cubes, coins, dienes, number lines, jumps on pre or part numbered number lines</p>	<p><b>Empty numberline</b></p> <p><b>Column addition</b> (carry below the line)</p>

<h1 style="writing-mode: vertical-rl; transform: rotate(180deg);">Subtraction</h1>	<ul style="list-style-type: none"> <li>• Deconstruct</li> <li>• Partition</li> <li>• Boundary number</li> <li>• Taking away</li> <li>• Finding the difference</li> </ul>	<p><b>Count back</b> - when the number added doesn't cross a boundary number</p> <p><b>Finding the difference (what was 'Silly Subtraction')</b> - when numbers are relatively close together</p> <p><b>Partition the 2<sup>nd</sup> number ONLY</b> - subtracting 2d or 3d numbers</p> <p><b>Compensation</b> - subtracting a number ending in 8 or 9</p> <p><b>Bridging</b> - when the number subtracted crosses a boundary number</p> <p><b>Refined number line</b> - steps on a number line written as calculations rather than as a jotting</p> <p style="color: red;"><b>Always subtract underneath the numberline</b></p> <p><b>Images:</b> 100 square (snakes and ladders set up), beadstring, 100 square with cubes, coins, dienes, number lines, jumps on pre or part numbered number lines</p>	<p><b>Empty numberline</b></p> <p><b>Column addition</b> (carry below the line)</p>
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<h1>Division</h1>	<ul style="list-style-type: none"> <li>• Dividend</li> <li>• Divisor</li> <li>• Quotient</li> <li>• Remainder</li> </ul>	<p><b>Sharing</b> - early but inefficient (links to fractions)</p> <p><b>Grouping (chunking)</b> - efficient for when dividends increase (links to multiplication)</p> <p>20/5 =</p> <p><i>'How many 5s are there in 20?'</i></p> <p>Use bead strings to model.</p> <p><b>Halving</b> - dividing by 2</p> <p><b>Halving twice</b> - dividing by 4</p> <p><b>Move digits</b> - dividing by 10, 100 etc</p> <p><b>Divide by 10 and double</b> - dividing by 5</p> <p><b>Divide by 100 and double</b> - dividing by 50</p> <p><b>Remainders</b> - 'out of the next group of...we have...' (natural experiences of this from an early age)</p> <p><b>Refined number line</b> - steps on a number line written as calculations rather than as a jotting</p> <p style="text-align: center;"><b>Model with arrays and number lines</b></p> <p style="text-align: center;">Images: pictures, tallies, systematic mark making, arrays, record hops on a part numbered number line)</p>	<p><b>Empty numberline (chunking)</b></p> <p><b>Long division (carry below the line)</b></p> <p><b>Short division (bus stop)</b></p>
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<h1>Multiplication</h1>	<ul style="list-style-type: none"> <li>• Refinement of repeated addition</li> <li>• Operand (the number you do something to)</li> <li>• Operator (the number you do it with)</li> </ul>	<p style="text-align: center;"> <math>4 \times 3 = 4 + 4 + 4</math>              (3 rows of 4 in an array)  <math>3 \times 4 = 3 + 3 + 3 + 3</math>              (4 rows of 3 in an array)         </p> <p>Once children know their times tables...</p> <p><b>Doubling</b> - <math>\times 2</math> (may still involve partitioning)</p> <p><b>Double, double again</b> - <math>\times 4</math> (may still involve doubling)</p> <p><b>Compensation</b> - <math>\times 9</math> (<math>\times 10</math> then take one group away)</p> <p><b>Move digits</b> - <math>\times 10</math> (not add zero!)</p> <p><b>X 10 and halve</b> - <math>\times 5</math> (show with an array of <math>\times 10</math> then split in half)</p> <p><b>Partition</b> - e.g. <math>32 \times 6</math> becomes <math>30 \times 6</math> and <math>2 \times 6</math> (model on an array)</p> <p><b>Images:</b> pictures, tallies, systematic mark making, arrays, record hops on a part numbered number line)</p>	<p><b>Short multiplication</b></p> <p><b>Long multiplication</b> (carry below the line)</p>
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