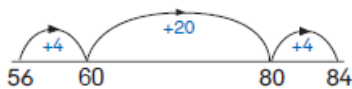
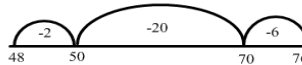
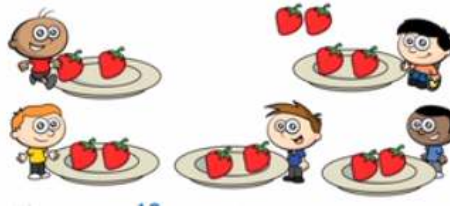
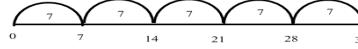


## Progression for written calculations

|                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                |                                                                                                                                 |                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                              |
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| <p><b>Addition</b></p> <p>Apparatus: needed for each of these methods when first introducing them.</p>    | <p><b>KS1</b></p> <p><b>Number line:</b> add smallest number onto largest. Then bridge across 10s and 100s.</p> <p>86 + 57</p>                                                                                                                                                                                                                                                   | <p><b>KS1</b></p> <p><b>Partitioning smallest number first</b> (no number line but partition smaller number to add to larger number). Then do bridging 10s and 100s.</p> <p>76 + 47</p> <p>76 + 40 + 7</p>     | <p><b>KS1</b></p> <p><b>Partition then recombine.</b></p> <p>47 + 76</p> <p>7 + 6 = 13<br/>40 + 70 = 110<br/>13 + 110 = 123</p> | <p><b>End of Y2 upwards</b></p> <p><b>Adding the least significant digits first</b></p> <p>DO NOT spend long on this: use it as preparation for exchanging.</p> <p>76<br/>+47<br/>13 (7+6)<br/>110 (70 +40)<br/>123</p> | <p><b>Columnar Addition</b></p> <p>47<br/>+ 76<br/>1 23<br/>✓</p> <p>EOY 3 Expectation: columnar addition to three digits. However, if the children are not ready, do not move them!</p>                                                                                                     | <p><b>EOY 4: Columnar addition to four digits</b></p> <p>EOY5: Columnar addition over four digits including uneven number of digits (not uneven decimals e.g. 1234.6 + 78.8)</p> <p>EOY 6: Larger numbers plus uneven number of decimals</p> |
| <p><b>Subtraction</b></p> <p>Apparatus: needed for each of these methods when first introducing them.</p> | <p><b>KS1</b></p> <p><b>Number line</b></p> <p><b>Counting up from the smallest number</b></p>  <p><b>Counting back from the larger to smaller</b></p>  <p>Teach both these methods, together, so they understand that even when counting forwards they are still finding the difference.</p> | <p><b>Partitioning then decomposition</b></p> <p>300 70 2<br/>- 200 80 8<br/>300 60 12<br/>- 200 80 8<br/>200 160 12<br/>-200 80 8<br/>0 80 4</p> <p>This phase will be longer than in the addition phase.</p> | <p><b>End of Y2 upwards</b></p> <p><b>Columnar subtraction</b></p> <p>2 16 1<br/>372<br/>-288<br/>84</p>                        | <p>EOY 3 Expectation: columnar subtraction to three digits. However, if the children are not ready, then do not move from partitioning with decomposition.</p>                                                          | <p><b>EOY 4: Columnar subtraction to four digits</b></p> <p>EOY5: Columnar subtraction over four digits including uneven number of digits (not decimals)</p> <p>EOY 6: Larger numbers plus uneven number of decimals</p> <p><b>BODMAS : order of operations is a Year 6 expectation.</b></p> |                                                                                                                                                                                                                                              |

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| <p><b>Multiplication</b></p> <p>Apparatus: needed for each of these methods, up to and including short multiplication, when first introducing them.</p> | <p><b>Grouping and sharing</b></p> <p><u>Using items</u></p>  <p><u>Number line</u></p> <p>5 x 7 = 35</p>  |                                                                                                                                                                                                                                                                         | <p><b>Arrays</b></p> <p>4 x 3 =12</p> <table border="1"><tr><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td></tr></table> |                                                                                                       |                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                       |                                                                                                                                                                                                                                      |  |  |  |  |  |  |  | <p><b>Short multiplication</b></p> $\begin{array}{r} 38 \\ \times 7 \\ \hline 266 \\ \hline \end{array}$ <p>EOY 5: Expectation for most children ThHTU by U and starting ThHTU x TU.<br/>Decimals in context e.g. money</p> | <p><b>Expanded long multiplication</b><br/>Multiplying least significant digit first</p> $\begin{array}{r} 56 \\ \times 27 \\ \hline 42 \quad (7 \times 6) \\ 350 \quad (7 \times 50) \\ 120 \quad (20 \times 6) \\ 1000 \quad (20 \times 50) \\ \hline 1512 \end{array}$ | <p><b>Long Multiplication</b></p> $\begin{array}{r} 37 \\ \times 29 \\ \hline 333 \\ 740 \\ \hline 1073 \end{array}$ <p>EOY 6: ThHTU x TU using long multiplication including decimals to 2.dp. (e.g. money)</p> |
|                                                                                                                                                         |                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                               |                                                                                                       |                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                       |                                                                                                                                                                                                                                      |  |  |  |  |  |  |  |                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                  |
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| <p><b>Division</b></p> <p>Apparatus: needed for each of these methods, up to and including short division, when first introducing them.</p>             | <p><b>Division (sharing and grouping)</b></p>                                                                                                                                             | <p><b>Arrays</b></p> <table><tr><td><p>15 ÷ 3 = 5</p></td><td><p>15 ÷ 5 = 3</p></td></tr></table> |                                                                                                                                                                                                                                               |  <p>15 ÷ 3 = 5</p> |  <p>15 ÷ 5 = 3</p> | <p><b>short division (NOT Bus Stop!) without remainders and then with remainders.</b></p> <div><math display="block">\begin{array}{r} 045 \\ 8 \overline{) 3640} \end{array}</math></div> <p>EOY 3: non-statutory TU÷U using short division (no remainders)<br/>EOY4: extending to HTU ÷U decimals (money in context)<br/>EOY5: Expectation ThHTU ÷ U and remainders (+ decimals)</p> | <p><b>Long division 'showing first' 2 digit</b></p> $\begin{array}{r} 23r4 \\ 24 \overline{) 556} \\ \underline{-480} \quad 24 \times 20 \\ 76 \quad 24 \times 3 \\ \underline{-72} \\ 4 \end{array}$ | <p><b>Long division 2 digit</b></p> $\begin{array}{r} 27 \\ 36 \overline{) 972} \\ \underline{72} \\ 252 \\ \underline{252} \\ 0 \end{array}$ <p>EOY6: ThHTU ÷ TU using bus stop method including decimals to 2.dp. (e.g. money)</p> |  |  |  |  |  |  |  |                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                  |
|  <p>15 ÷ 3 = 5</p>                                                   |  <p>15 ÷ 5 = 3</p>                                                                                                                                                                        |                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                               |                                                                                                       |                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                       |                                                                                                                                                                                                                                      |  |  |  |  |  |  |  |                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                  |