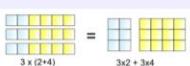


# Crudgington Primary School

## Calculation policy

### Year 4

Policy reflects: concrete (do it!) abstract (see it!) visual (remember it!) communication (record it!)

Addition	Subtraction	Multiplication	Division								
<p><b>Year 4</b></p> <p>Continue with HTU + HTU, then extend to ThHTU + ThHTU.</p> <p>Approximate using the most significant digit, rounding skills.</p> <p>Check using the inverse.</p> <p>Refer to the carried digit as a ten or a hundred.</p> <p><math display="block">\begin{array}{r} 587 \\ + 475 \\ \hline 1062 \\ 11 \end{array}</math></p> <p>"7 add 5 equals 12. That's 2 units and 1 ten to carry over. 80 add 70 equals 150 and the one ten to carry makes 160. That's 6 tens and 100 to carry over. 500 add 400 equals 900 and the one hundred to carry makes 1000"</p> <p><math display="block">\begin{array}{r} 7648 \\ + 1486 \\ \hline 14 \\ 120 \\ 1000 \\ +8000 \\ \hline 9134 \\ 111 \end{array}</math></p>	<p><b>Year 4</b></p> <p>HTU – TU, then HTU – HTU. (ThHTU – ThHTU) (THHTU – HTU)</p> <p>Extend to simple decimals with or without exchange from pence to pounds.</p> <p>Ensure that all calculation is checked before started for any other possible 'tricky' bits.</p> <p>Ensure that the setting out is accurate.</p> <p><math>754 - 86 = 668</math></p> <p><b>Take away (left)</b></p> <p><math display="block">\begin{array}{ccccccc} &amp; -6 &amp; &amp; -80 &amp; &amp; &amp; \\ \text{668} &amp; \text{674} &amp; &amp; \text{754} &amp; &amp; &amp; \\ \text{or} &amp; &amp; &amp; &amp; &amp; &amp; \\ &amp; -2 &amp; &amp; -80 &amp; &amp; -4 &amp; \\ \text{668} &amp; \text{670} &amp; &amp; \text{750} &amp; &amp; \text{754} &amp; \\ \text{or} &amp; &amp; &amp; &amp; &amp; &amp; \\ &amp; -80 &amp; &amp; -6 &amp; &amp; &amp; \\ \text{668} &amp; &amp; &amp; \text{748} &amp; &amp; \text{754} &amp; \end{array}</math></p> <p><b>Find the difference (right)</b></p>	<p><b>Year 4</b></p> <p>Know table facts up to <math>12 \times 12</math></p> <p>Approximate first.</p> <p>Partitioning / distributive law, e.g. <math>28 \times 4</math> can be split up into <math>25 \times 4</math> add <math>3 \times 4</math> or <math>30 \times 4</math> subtract <math>2 \times 4</math>.</p> <div style="background-color: #e0f2f1; padding: 10px;"> <p><b>Distributive Law</b> <a href="#">more ...</a></p> <p>The Distributive Law says that multiplying a number by a group of numbers added together is the same as doing each multiplication separately.</p> <p>Example: <math>3 \times (2+4) = 3 \times 2 + 3 \times 4</math></p> <p>So the "3" can be "distributed" across the "2+4" into 3 times 2 and 3 times 4.</p>  </div> <p>Pupils to explain the effect of multiplying by 10 and 100.</p> <p>Addition to be done mentally.</p> <p>HTU and TU x U.</p> <p>Record using grid notation and expanded short multiplication.</p> <p><math>346 \times 9</math></p> <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td>x</td> <td>300</td> <td>40</td> <td>6</td> </tr> <tr> <td>9</td> <td></td> <td></td> <td></td> </tr> </table>	x	300	40	6	9				<p><b>Year 4</b></p> <p>Know division facts corresponding to tables up to <math>12 \times 12</math></p> <p>Approximate first using multiplication facts.</p> <p>Divide any integer up to 1000 by 10.</p> <p><math>900 \div 10 = 90</math> because the digits move one place to the right"</p> <p>Recap the finding of remainders on the number line first.</p> <p><math>21 \div 5</math></p> <p>"What do I know? I know that 21 is not a multiple of 5, so there will be a remainder."</p> <p>Jump size depends on knowledge and confidence of child. (See D) This could also be shown as jumps of +5 along the number line resulting in 4 jumps and a remainder of 1.</p> <p>Use problems in contexts that require the answer to be rounded up or down following the remainder. Eg 35 children to sleep four to a tent. How many tents do we need?</p>
x	300	40	6								
9											

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$  \begin{array}{r}  12\ 45 \\  7\ 36 \\  + 24\ 50 \\  \hline  0\ 11 \\  1\ 20 \\  13\ 00 \\  30\ 00 \\  \hline  44\ 31  \end{array}  $	<p><b>Decomposition</b> (Continue with Dienes and/or money as appropriate)</p> $  \begin{array}{r}  754 & 700 & 50 & 4 \\  - 86 & \hline  600 & 60 & 8 = 668  \end{array}  $ $  \begin{array}{r}  754 & 600 & 140 & 14 \\  - 86 & \hline  600 & 60 & 8 = 668  \end{array}  $ <p>"It's tricky to take 6 from 4 and 80 from 50. I need to rearrange the number. I will exchange one ten from 50 which leaves 40 and makes 14 in the units. 40 to subtract 80 is tricky. I will <b>exchange</b> one hundred from 700 and make 140. 14 subtract 6 equals 8. 140 subtract 80 equals 60 and 600 subtract 0 equals 600."</p> <p><b>Decomposition</b></p> $  \begin{array}{r}  \text{£} & \text{£} \\  895 & 8 . 90 5 \\  - 438 & 4 . 30 8 \\  \hline  4 . 50 7 = 4.57  \end{array}  $ $  \begin{array}{r}  \text{£} & \text{£} \\  895 & 7 . 80 15 \\  - 438 & 4 . 30 8 \\  \hline  4 . 50 7 = 4.57  \end{array}  $	$  \begin{array}{r}  346 \\  \times 9 \\  \hline  54 \quad (9 \times 6) \\  360 \quad (9 \times 40) \\  + 2700 \quad (9 \times 300) \\  \hline  3114  \end{array}  $ <p>Short multiplication with compact notation to be introduced once the expanded method is secure.</p> <p><b>Decision making</b> Children investigate statements and solve word problems using appropriate methods. Children are also given examples of <math>\times 9</math> and encouraged to think about using methods such as <math>\times 10</math> and subtracting <math>\times 1</math>.</p>	<p>Continue to use partitioning/re-arranging method.</p> $  \begin{array}{r}  128 + 8 \\  0 \\  80 \\  5 \times 8 = 40 \\  120 \\  1 \times 8 = 8 \\  128 \\  \hline  136 + 8 = 16  \end{array}  $ <p>Fractions relate to division. <math>\div 4</math> is the same as halve and halve again.</p> <p>This will be extended to numbers which would include remainders:</p> $  \begin{array}{r}  125 + 11 \\  0 \\  110 \\  121 \\  1 \times 11 = 11 \\  125 \\  \hline  R4 \\  125 + 11 = 11 R 4  \end{array}  $ <p>Recognise that division is non-commutative.</p> <p>Know that a number cannot be divided by 0.</p>
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	$  \begin{array}{r}  & 6 & 14 & 1 \\  & \cancel{1} & \cancel{8} & 4 \\  - & 2 & 8 & 6 \\  \hline  & 4 & 6 & 8  \end{array}  $ <p>Emphasis on language of place value, i.e. 14 units subtract 6 units, 14 tens subtract 8 tens, and 6 hundreds subtract 2 hundreds.</p>	$96 \div 6$ <p>"What do I know? <math>6 \times 10 = 60</math>"</p> $  \begin{array}{r}  60 & 36 \\  \downarrow & \downarrow \\  10 & 6  \end{array}  $ $96 \div 6 = 16$ <p>Division as repeated addition of multiples of the divisor.</p> $132 \div 3$ <p>Write a partial table</p> $3 \times 10 = 30$ $3 \times 20 = 60$ $3 \times 40 = 120$
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