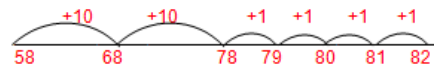
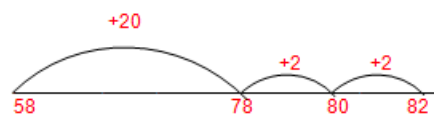
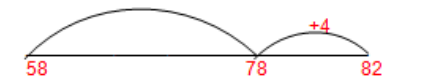
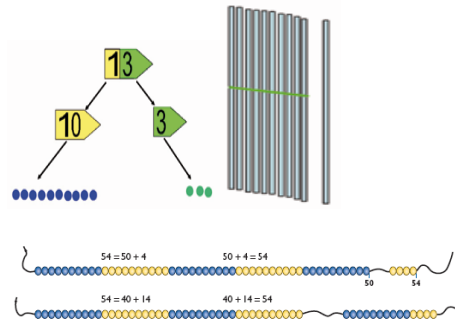
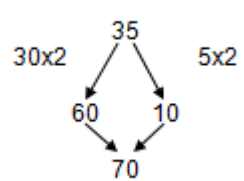
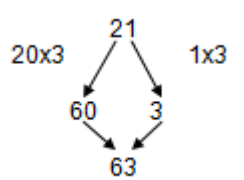


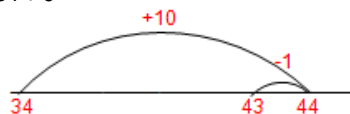
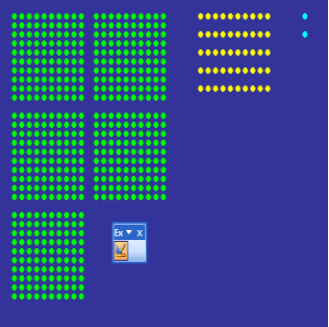
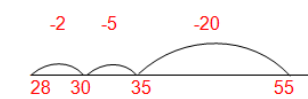
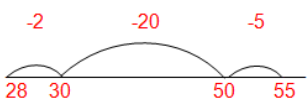
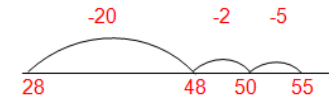
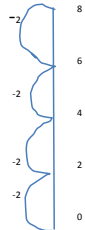
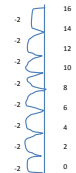
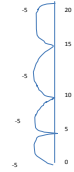
# Primary School Calculation policy Year 2 and 3

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

Addition	Subtraction	Multiplication	Division
<p style="text-align: center;"><b><u>Year 2</u></b></p> <p>Emphasis on mental calculation.</p> <p>Combining sets to make a total.</p> <p>Progression in use of informal recording including the number line.</p> <p>Answers to be recorded as part of a number sentence.</p> <p>Reordering strategy.</p> <p><a href="#">COUNTING ON AND BACK ITP</a> <a href="#">NUMBER LINE ITP</a></p> <p>Adding:  <math>TU + TU = TU</math>            and when secure moving on to  <math>TU + TU = HTU</math>  <math>HTU + TU = HTU</math></p> <p>24 + 58</p>  <p>adding in 10s and 1s</p>  <p>add 20, bridge the 10</p> 	<p style="text-align: center;"><b><u>Year 2</u></b></p> <p>Place value, partitioning and recombining.</p> <p>Rearranging of numbers so that 36 can be seen as 30 and 6 or as 20 and 16.</p> <p>Partitioning of numbers into T and U then HTU. Know what each digit represents.</p> <p>TU – TU HTU – TU</p>  <p><a href="#">PLACE VALUE ITP</a></p> <p><b>Partitioning the second number strategy</b></p> <p>76 – 43 =        76 – 40 = 36        36 – 3 = 33</p> <p>73 – 46 =        73 – 40 = 33        33 – 6 = 27</p>	<p style="text-align: center;"><b><u>Year 2</u></b></p> <p>Using tables facts 2s, 10s and 5s and 3s and 4s.</p> <p>Be able to partition a 2 digit number.</p> <p><a href="#">MULTIPLICATION BOARD ITP</a> <a href="#">MULTIPLICATION TABLES ITP</a></p> <p>Doubles are same as x2.</p> <p>Vocabulary of double, multiply, groups of, sets of, lots of etc.</p> <p>Partitioning strategy for doubling.</p> <p>Double 35</p>  <p>A lolly costs 21p. How much do 3 cost?</p>  <p><b>Decision making</b>        Children investigate statements and solve word problems using appropriate methods such as mental/ jottings/ numberline.</p>	<p style="text-align: center;"><b><u>Year 2</u></b></p> <p>Understand division as repeated subtraction, grouping.</p> <p>Table facts (see multiplication).</p> <p>Division facts corresponding to the 2, 10, 5, 3 and 4 times tables.</p> <p>Use x and ÷ signs.</p> <p><a href="#">MULTIPLICATION AND DIVISION TRIOS SPREADSHEET</a></p> <p>Count a handful of beads by grouping them in fives. How many groups of 5 are there? How many are left? Can you write a division sentence to describe this?</p> <p>How many lengths of 6 m can you cut from 48m of rope? Write the number fact that represents this. How did you work it out?</p> <p>(<a href="#">OVERCOMING BARRIERS</a> L2-L3 knowing and using number facts)</p> <p><b>Record using the correct division symbol.</b></p> <p><b>Use of number lines to record repeated subtraction.</b></p> <p><b>Practical apparatus to support concept.</b>        Introduce the vocabulary of remainder.</p> <p><b>Practical contexts to be used so that the calculation is not in the abstract.</b></p>


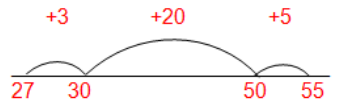
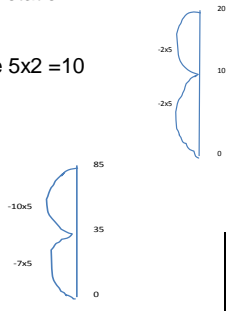
# Primary School Calculation policy Year 2 and 3

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

<p>add 20 and then 4</p> <p><b>Record partitioned steps in number sentences underneath each other and add mentally.</b></p> <p>24+58= 20+50=70 4+8=12 70+12=82</p> <p>Introduce column addition without crossing the boundary</p> <p style="margin-left: 20px;"> <math display="block">\begin{array}{r} 24 \text{ (20+4)} \\ +53 \text{ (50+3)} \\ \hline 77 \text{ (70+7)} \end{array}</math> </p> <p><b>Check answers by repeating addition in different order or by an equivalent calculation.</b></p> <p><b>Compensation strategy</b></p> <p>34 + 9 =</p>  <p><b>Near doubles</b></p> <p>13 + 14 = <input type="text"/></p> <p>Double 14 = 28</p> <p>28 - 1 = 27</p> <p>or</p> <p>Double 13 = 26</p> <p>26 + 1 = 27</p> <p><a href="#">EXCEL MISSING SIGNS AND NUMBERS</a></p>	 <p><a href="#">PLACE VALUE DOTS EXCEL SPREADSHEET</a></p> <p><b>Counting back (left) from the larger number in partitioned steps of the smaller number to reach the unknown.</b></p> <p>55 - 27</p> <p><b>Rearranging strategy</b> <i>Partitioning the 27 into 20, 5 and 2.</i></p>  <p>or</p>  <p>or</p> 	<p><u>Grouping</u></p>  <p>“How many groups (    are    ) in 8?”</p> <p>The number of jumps tells you the number of groups.</p> <p><a href="#">DOUBLING AND HALVING SPREADSHEET</a></p> <p>16 ÷ 2 =</p> <p>“How many groups of 2 are there in 16?”</p> <p>“I know that dividing by 2 is the same as halving.”</p>  <p>Jump size depends on knowledge and confidence of child. (See D)</p> <p>20 ÷ 5 =</p> <p>4 jumps</p> 
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# Primary School Calculation policy Year 2 and 3

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

<p><b>Adding zero leaves a number unchanged/ adding ten to a number keeps units digit constant.</b></p> <p><b>Decision making (mental, jottings, numberline)</b> Statements and word problems.</p>	<p><math>55 - 27 = 28</math></p> <p><b>Find the difference (counting on to the right)</b></p> <p><math>55 - 27 = 28</math></p> <div style="text-align: right; margin-right: 20px;">  </div> <p>“How many more do I need to add to 27 to get to 55?”</p> <div style="text-align: center;">  </div> <p><b>Subtract mentally pairs of multiples of 10 and 100, using known facts</b></p> <p><math>60 - 20 = 40</math> because <math>6 - 2 = 4</math></p> <p><math>700 - 300 = 400</math></p> <p>Continue to use the vertical number line.</p> <p><b>Use of apparatus (Diennes) to understand rearrangements, e.g. 55 as 40 and 15, not as part of calculations.</b></p> <p><b>BEADSTICKS ITP</b> to be used with Diennes to develop concept of exchange.</p> <p>(Beadstick and other place value ITPS)</p> <p><b>Decision making</b> Statements and word problems.</p>	<p>or moving away from + notation</p> <p>2 double jumps because <math>5 \times 2 = 10</math></p> <p><math>85 \div 5 =</math></p> <div style="text-align: center;">  </div> <p><b>Decision making</b> Children investigate statements and solve word problems using appropriate methods such as mental/ jottings/ numberline.</p>
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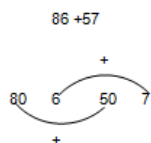
# Primary School Calculation policy Year 2 and 3

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

## Year 3

Counting on in multiples of 100s, 10s or units using a number line.

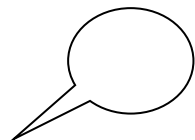
HTU + TU  
Cross the 10s/100s boundary.



[NUMBER BOARDS \(all stages onwards\) for range of numbers](#)

Start with least significant digit

$$\begin{array}{r} 67 \\ + 24 \\ \hline 11 \text{ (7+4)} \\ + 80 \text{ (60+20)} \\ \hline 91 \end{array}$$



"7 add 4 equals 11 and 60 add 20 equals 80. 1 + 0 = 1 and 1 ten + 8 tens = 9 tens"

$$\begin{array}{r} 625 \\ + 48 \\ \hline 13 \text{ (5+8)} \\ 60 \text{ (20 + 40)} \\ + 600 \text{ (600 + 0)} \\ \hline 673 \end{array}$$

All language in the context of the place value and the mental addition of the totals to be done in any order.

$$\begin{array}{r} 625 \\ + 48 \\ \hline 673 \end{array}$$

## Year 3

Counting backwards and forwards beyond zero, negative and positive numbers.

-5 is negative 5 and minus 5

TU – TU, HTU – TU, HTU – HTU.

Lead on to decomposition method in expanded format.

Ensure understanding of number partitioning and exchange.

Least significant digit is always dealt with first to establish if the exchange is needed.

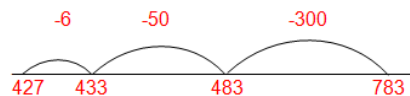
Check for mental approach first before written method. "Can I do this in my head?"

[NUMBER BOARDS \(all stages onwards\) for range of numbers](#)

**Reduction strategy**

$$783 - 356$$

Partitioning the 356 into 300, 50 and 6.



$$783 - 356 = 427$$

**Difference strategy**

"How many more do I need to get from 356 to

## Year 3

Known table facts 2, 3,4,5,6, 8 and 10.

[NUMBER DIALS ITP](#)

Refer to multiplication tables ITPs above.

Refer to Page 60 Overcoming barriers L2-L3 for further guidance.

Multiply by 10 / 100, understanding the shift in the digits.

Know what each digit represents, partition a three digit number.

Commutative law (the principle that the order of two numbers in a multiplication calculation makes no difference, e.g. 5x7=7x5).

[MOVING DIGITS](#)

Consolidate arrays and repeated addition. Recalling facts.

$$4 \times 5 = 20, 5 \times 4 = 20.$$

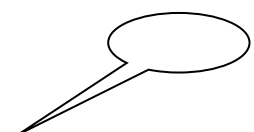
Informal recording of partitioned numbers  
 $15 \times 5 = 75$

$$\begin{array}{l} 10 \times 5 = 50 \\ 5 \times 5 = 25 \end{array}$$

$$27 \times 3 = 81$$

$$\begin{array}{l} 20 \times 3 = 60 \\ 7 \times 3 = 21 \end{array}$$

"20 multiplied by 3 equals 60 and 7 multiplied by 3 equals 21. 60 add 21 equals 81."



## Year 3

Understand division as repeated subtraction.

Know all corresponding table facts for 2, 3,4,5,6, 8 and 10.

Know what each digit represents in a HTU number.

Use numbers that will generate remainders. r notation for the remainder.

$$21 \div 5 = 4 \text{ r } 1$$

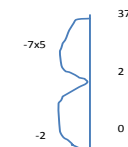
Record using a number line,  
 $30 \div 5 = 6$



"What do I know about the number I am dividing by?"  
"I know that 5 x 6 = 30"

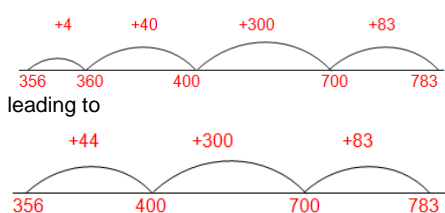

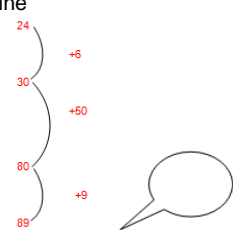

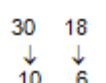
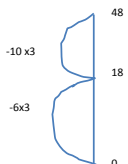
Repeated subtraction along a number line with jumps representing number of groups.

$$37 \div 5 =$$



# Primary School Calculation policy Year 2 and 3

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

<p><b>Decision making.</b></p>	<p>783?"</p>  <p>leading to</p> <p><b>Both strategies need to record the answer in a number sentence.</b></p> <p><math>783 - 356 = 427</math> "783 subtract 356 equals 427"</p> $\begin{array}{r} 89 = 80 \quad 9 \\ - 24 = 20 \quad 4 \\ \hline 60 \quad 5 = 65 \end{array}$  <p>"9 subtract 4 equals 5 and 80 subtract 20 equals 60. 60 and 5 make 65"</p> <p>Vertical number line</p>   <p>"Add 6 to 24 to make 30. Add 50 to 30 to make 80. Add 9 to 80 to make 89. So 6 add 50 add 9 equals 65."</p>	<p>Unifix model for the array (image TBA)</p> <p><math>23 \times 8 =</math> <math>20 \times 8 = 160</math> <math>3 \times 8 = 24</math></p> <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td style="padding: 2px 5px;">x</td> <td style="padding: 2px 5px;">20</td> <td style="padding: 2px 5px;">3</td> </tr> <tr> <td style="padding: 2px 5px;">8</td> <td style="padding: 2px 5px;"></td> <td style="padding: 2px 5px;"></td> </tr> </table> <p><math>23</math> <math>\begin{array}{r} \times 8 \\ 24 \quad (8 \times 3) \\ 160 \quad (8 \times 20) \\ \hline 184 \end{array}</math></p> <p><b>Decision making</b></p>	x	20	3	8			<p><b>Use partitioning/re-arranging to find multiples of the divisor.</b></p> <p>Partitioning method <math>48 \div 3 =</math> 'What do I know about 3 x tables?' "I know <math>3 \times 10 = 30</math>."</p>  <p><math>48 \div 3 = 16</math></p> <p><math>10 \times 3 = 30</math></p> <p><math>6 \times 3 = 18</math></p>  <p><b>Decision making</b></p>
x	20	3							
8									

# Primary School Calculation policy Year 2 and 3

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

$$\begin{array}{r} 81 = 80 \quad 1 \\ - 57 \quad 50 \quad 7 \\ \hline \phantom{0} \phantom{0} \phantom{0} = 24 \end{array}$$

$$\begin{array}{r} 81 = 70 \quad 11 \\ - 57 \quad 50 \quad 7 \\ \hline \phantom{0} \phantom{0} \phantom{0} = 24 \end{array}$$



"1 to subtract 7 is tricky so I will rearrange 81 into 70 and 11. 11 subtract 7 equals 4 and 70 subtract 50 equals 20. 20 and 4 make 24."

[BEADSTICKS ITP](#)

**Decision making**