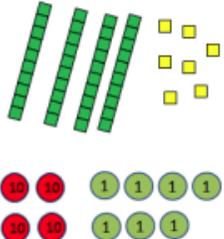
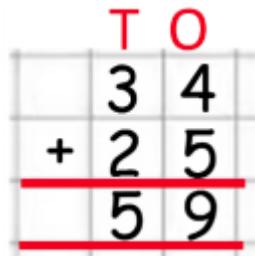
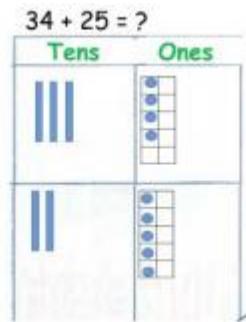


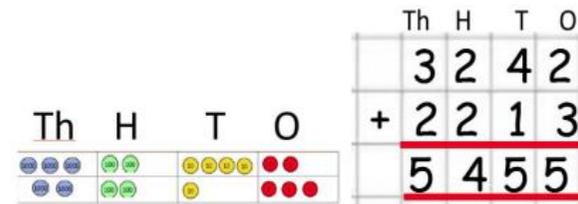
Year 3 and 4 Addition																		
Year 3	Year 4																	
Mental strategies																		
<p>Children should count regularly, on and back, now including multiples of 4, 8, 50 and 100 and in steps of 1/10.</p> <p>The number line should still be used to support thinking as well as informal jottings. Children should continue to partition in different ways.</p> <p>They should be encouraged to use mental strategies which are most efficient for the numbers involved: <i>Add the nearest multiple of 10, then adjust such as $63 + 29$ is the same as $63 + 30 - 1$; counting on by partitioning the second number only such as $72 + 31 = 72 + 30 + 1 = 102 + 1 = 103$</i></p> <p>Manipulatives can be used to support mental imagery and conceptual understanding. Children need to be shown how these images are related eg. What's the same? What's different?</p> <div style="display: flex; justify-content: space-around; align-items: flex-start;"> <div style="text-align: center;">  </div> <table border="1" style="border-collapse: collapse;"> <thead> <tr> <th style="width: 15%;">Objective</th> <th style="width: 85%;">Concrete</th> </tr> </thead> <tbody> <tr> <td style="writing-mode: vertical-rl; transform: rotate(180deg);">Column method without regrouping</td> <td> <p>Add together the ones first, then add the tens. Use the Base 10 blocks first before moving onto place value counters.</p> <p>$24 + 15 =$</p> <div style="display: flex; justify-content: space-around;"> <table border="1" style="border-collapse: collapse; text-align: center;"> <tr><td>T</td><td>O</td></tr> <tr><td>20</td><td>4</td></tr> <tr><td>10</td><td>5</td></tr> <tr><td>30</td><td>9</td></tr> </table> <table border="1" style="border-collapse: collapse; text-align: center;"> <tr><td>40</td><td>9</td></tr> <tr><td>4</td><td>4</td></tr> <tr><td>44</td><td>15</td></tr> </table> </div> </td> </tr> </tbody> </table> </div>	Objective	Concrete	Column method without regrouping	<p>Add together the ones first, then add the tens. Use the Base 10 blocks first before moving onto place value counters.</p> <p>$24 + 15 =$</p> <div style="display: flex; justify-content: space-around;"> <table border="1" style="border-collapse: collapse; text-align: center;"> <tr><td>T</td><td>O</td></tr> <tr><td>20</td><td>4</td></tr> <tr><td>10</td><td>5</td></tr> <tr><td>30</td><td>9</td></tr> </table> <table border="1" style="border-collapse: collapse; text-align: center;"> <tr><td>40</td><td>9</td></tr> <tr><td>4</td><td>4</td></tr> <tr><td>44</td><td>15</td></tr> </table> </div>	T	O	20	4	10	5	30	9	40	9	4	4	44	15
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44	15																	

Children were introduced to column method in year 2. Review learning of column addition without crossing the boundary first. Ensure you refer to the value of the digitise g. 4 ones add 3 ones is equal to 7 ones. 2 tens add five tens is equal to 7 tens. Children should use jottings alongside to support their understanding and then move away as soon as they are secure. Make sure the columns are labelled and images are used alongside the written method.



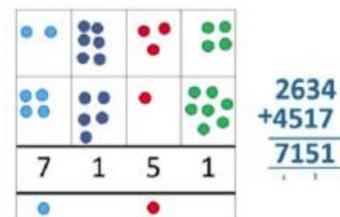
Move onto crossing tens boundary

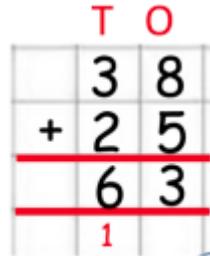
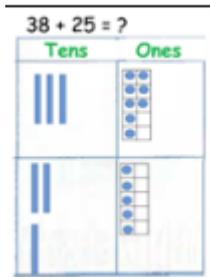
Written methods (progressing to 4-digits) Review year 3 final progression adding hundreds. Make sure images are used alongside compact column addition modelled with place value counters, progressing to calculations with 4-digit numbers. Introduce adding thousands with no exchange/ crossing boundary to begin with



Children can label the columns. Refer to the value of the digits e. g add 2 ones add 3 ones is equal to 5 ones. In the tens column add 4 tens add 1 ten is equal to 5 tens etc. Move onto crossing boundaries.

Compact written method
Extend to numbers with at least

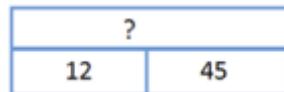
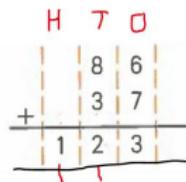




Steps for addition:

- Keep the digits aligned in the correct column
- Calculate from the ones place
- Exchange 10 ones for 1 ten and carry the digit
- Add the tens

Before moving onto adding hundreds ensure you give children opportunity to cross the hundreds boundary. Eg the example given. Use the bar model to show the relationship between the part, part, whole. When using the addition bar model: draw the part, then add the other part. Now draw the bar for the whole. By adding the two parts you find the whole.



Introduce adding hundreds with no exchange. Ensure images are used to expose structure. Ones need to be placed in a ten frame to ensure calculating rather than counting.

$$\begin{array}{r} 587 \\ + 475 \\ \hline 1062 \\ 11 \end{array}$$



"7 ones add 5ones equals 12ones . That's 2 ones and 1 ten to carry over.
8 tens add 7 tens equals 15 tens and the one ten to carry makes 16 tens. That's 6 tens and 100 to carry over. 500 add 400 equals 900 and the one hundred to carry makes 1000"

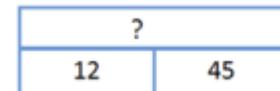
$$\begin{array}{r} 7648 \\ + 1486 \\ \hline 9134 \\ 111 \end{array}$$

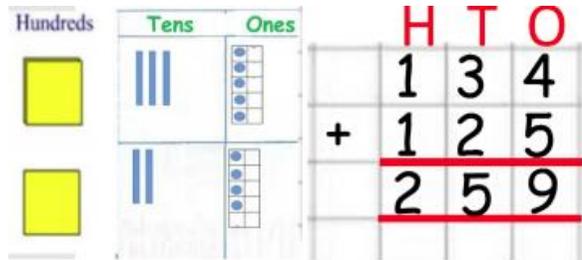
Refer to the carried digit as a ten or a hundred.

Extend to up to two decimal places (same number of decimal places) and adding several numbers (with different numbers of digits).

$$\begin{array}{r} 72.8 \\ + 54.6 \\ \hline 127.4 \\ 11 \end{array}$$

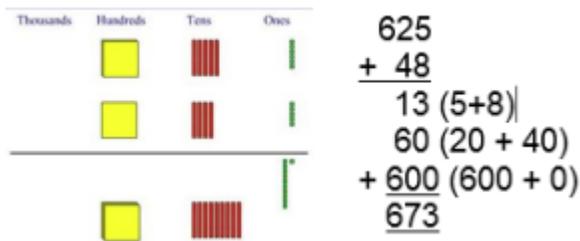
Place value counters to be used alongside columnar method to develop conceptual understanding. Use bar model to show part-part whole relationship.





Introduce crossing boundary using dienes apparatus or

place value counters.



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

Expanded notation to be used before compact to ensure understanding. This is a bridging method and children should be moved on for the next lesson. All language in the context of the place value and the mental addition of the totals to be done in any order. Some children may begin to use a formal columnar algorithm, initially introduced alongside the expanded method. The formal method should be seen as a more streamlined version of the expanded method, not a new method.

$\begin{array}{r} 625 \\ + 48 \\ \hline 673 \end{array}$ <p>Carrying digits to be noted under the line</p> <p style="color: red; text-align: center;">↓</p> <p>Use the bar model to show the part, part whole relationship.</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td colspan="2" style="text-align: center;">?</td> </tr> <tr> <td style="text-align: center;">12</td> <td style="text-align: center;">45</td> </tr> </table>	?		12	45	
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12	45				