
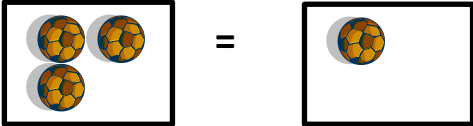

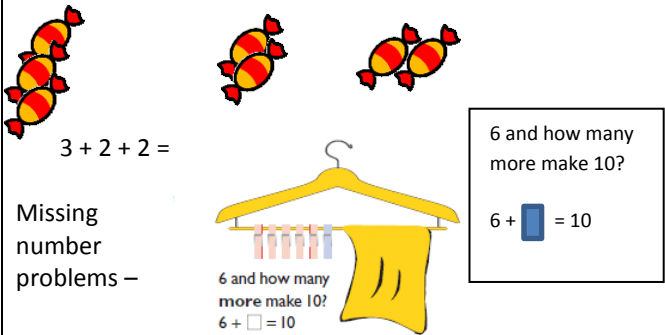

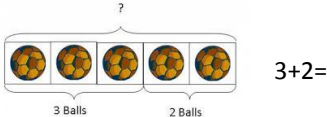
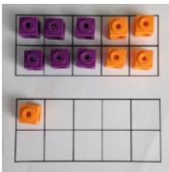
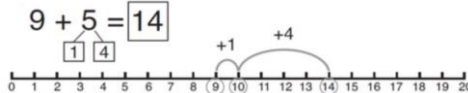

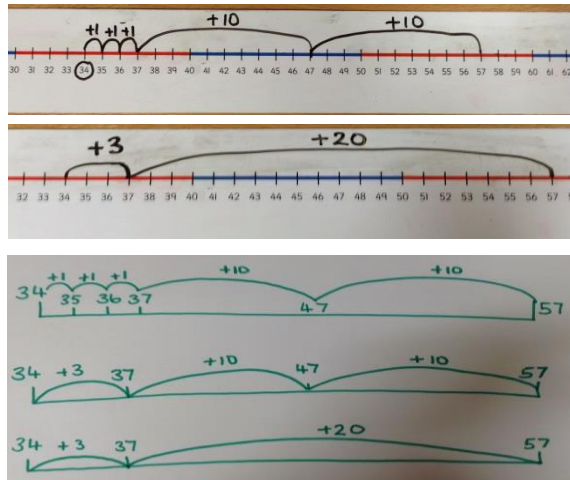

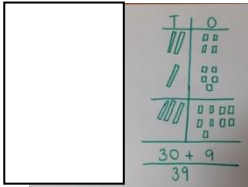
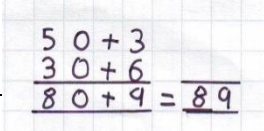
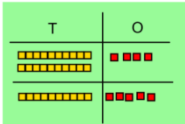
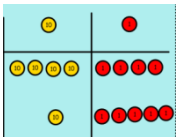
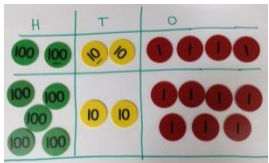
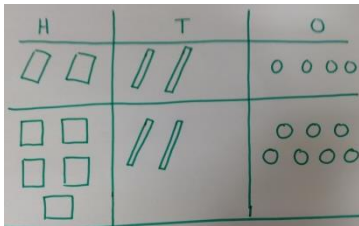
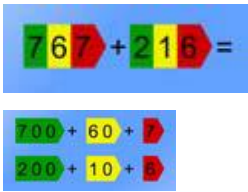
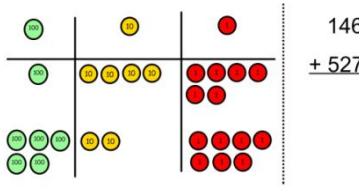

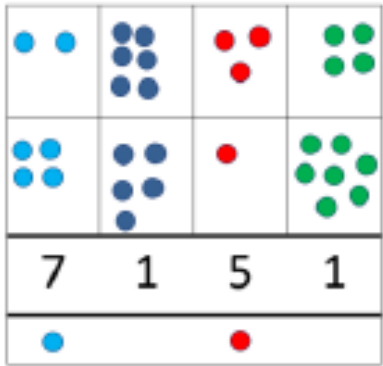


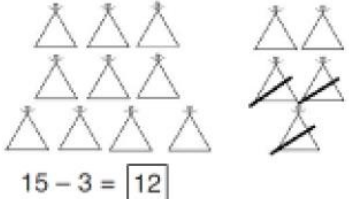
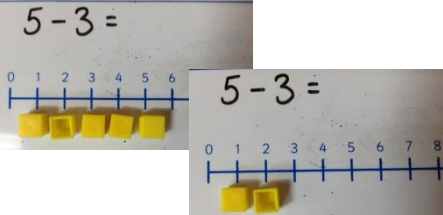
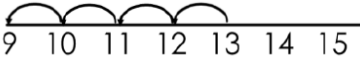
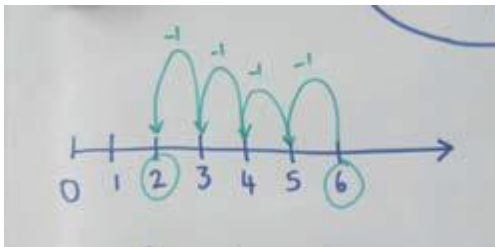



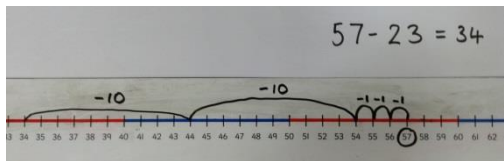
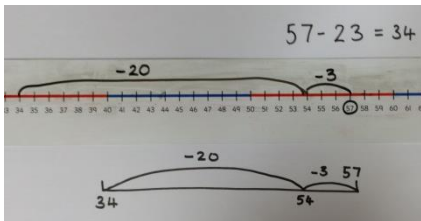
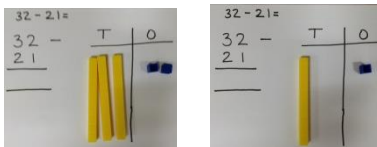

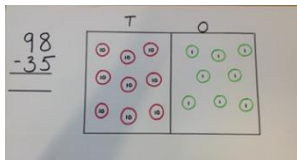
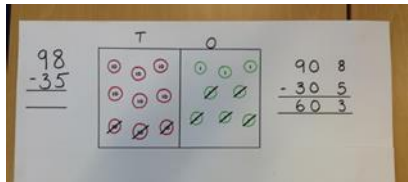
<h1>Addition</h1>	Vocabulary NB:H=hundreds/T=Tens/O=ones	number bonds, number line, add, more, plus, make, sum, total, altogether, double, how many more?, column addition, partition, counting on, efficient method, order of operations, increase	
Objective and Strategies	Concrete	Pictorial	Abstract
Introduction of the = sign/develop understanding of 'equals'.	Introduce the = sign and start with examples like $5 = 5$ using different objects.  Use a balance to illustrate.	Use the = sign in different places in pictorial problems – sometimes have the total box at the beginning. For example, draw how many more you need to make the sets equal. 	Use the = sign in different places For example $3 = 2 + 1$ $1 + 2 = 3$ – throughout EY-KS1 and KS2. - missing number problems are introduced in Year 1. For example, $3 + ? = 5$
Combining two or more parts to make a 'whole'. Horizontal recording of an addition calculation.	Use different objects – toys/cubes/stones/shells etc. to combine two or more groups and develop the language of addition e.g. how many more? / How many altogether? / What is my total? Place the = sign in different places.  $5 + 1 = 6$ start to relate to the calculation  $3 + 2 + 2 =$ Missing number problems – $6 + \square = 10$ $6 + \square = 10$ Children count out 6 cubes – how many more do I need to have 10 in total?	Word problems e.g. 'You have five apples and I have three apples. How many apples altogether?'  Initially, record how many in each set, then complete the calculation. Children/adult draw the apples.  $3 + 2 =$ Draw 6 circles – how many more do I need to make 10?	Word problems e.g. 'You have five apples and I have three apples. How many apples altogether?' Introduce the symbols $3 + 2 =$ Note: children can still draw their own pictures if needed or use fingers – but will count all objects. Matching games / loop games. Missing number problems solved using fingers.

number bonds.	together to make 10. Add on 7.		In Year 2 introduce missing numbers. For example: $32 + \square + \square = 100$,
Regrouping.	 $6 + 5 =$ Start with the bigger number and use the smaller number to make 10.	 $9 + 5 = 14$	$7 + 4 = 11$ If I am at seven, how many more do I need to make 10? How many more do I add on now?
Adjusting	Use multilink/bundles of straws/base 10 that breaks up to add a near multiple of ten. Physically adjust by adding or subtracting one.	Add 9 or 11 by adding 10 and adjusting by 1. Using a number line or 100 square.	Solve mentally.
Add a 2 or 3 digit number using a number line and partitioning. Horizontal recording of an addition calculation.	Use bead strings to show the groups of ten and ones. $34 + 23 =$ $34 + 3 = 37$ $37 + 20 = 57$ 	Initially use a numbered number line to add on in steps of tens and ones, or hundreds, tens and ones. Then progress to using blank number lines. 	Jumping on in steps mentally. $34 + 23 =$ <div style="border: 1px solid blue; border-radius: 15px; padding: 10px; display: inline-block;"> Well I know 34 plus 3 is 37 and 37 plus 20 is 57. </div> This can also be used for money and time.
Introduce the column method by partitioning into tens and ones and recombine.	$24 + 15 =$ Moving to: $\begin{array}{r} 24 \\ + 15 \\ \hline \end{array}$ Add together the ones first, and then add the tens. Use bundles of objects  $42 + 31 = 73$	Draw base 10 / place value coins For example: $\begin{array}{r} 24 \\ + 15 \\ \hline \end{array}$ 	Progress to the written method. For example, $53 + 36 = 89$ 

	<p>e.g. straws, then progress to Base 10 blocks before moving onto place value counters.</p> <div>   <p> $TO + O =$ $TO + TO =$ $HTO + HTO =$ </p> </div> <p>224 + 527 =</p> <div>  </div> <p> $\begin{array}{r} 224 \\ + 527 \\ \hline \end{array}$ </p>	<p>224 +527</p>  <p>767 +216</p> 	<div> $\begin{array}{r} 30 + 4 \\ 20 + 5 \\ 50 + 9 \\ \hline \end{array} \Rightarrow \begin{array}{r} 34 \\ +25 \\ \hline 59 \end{array}$ </div> <div> $\begin{array}{r} 200 + 30 + 4 \\ 500 + 20 + 7 \\ 700 + 60 + 1 \\ \hline 10 \qquad 1 \end{array} \Rightarrow \begin{array}{r} 234 \\ + 527 \\ \hline 761 \end{array}$ </div>
<p>Column method with regrouping.</p>	<p>Physically make both numbers on a place value grid using objects.</p> <div>  <p> $\begin{array}{r} 146 \\ + 527 \\ \hline \end{array}$ </p> <p>Add up the ones and exchange 10 ones for one 10.</p> </div> <div>  <p> $\begin{array}{r} 146 \\ + 527 \\ \hline \end{array}$ </p> <p>Add up the rest of the columns, exchanging the 10 counters from one column for the next place value column until every column has been added. This can also be done with Base 10 to help children clearly see that 10 ones equal 1 ten and 10 tens equal 100. As children move on to decimals,</p> </div>	<p>Children can draw a pictorial representation of the columns and place value counters to further support their learning and understanding.</p> <p>2,634 +4,517</p> 	<p>Start by partitioning the numbers before moving on to clearly show the exchange below the addition.</p> <p> $\begin{array}{r} 20 + 5 \\ 40 + 8 \\ 60 + 13 = 73 \end{array}$ </p> <p>As the children move on, introduce decimals with the same and different number of decimal places. Money can be used here.</p> <p> $\begin{array}{r} 536 \\ + 85 \\ \hline 11 \\ 621 \end{array}$ </p> <div> <p>Note: In written column addition, leave a space for carrying numbers to the next column. Numbers are carried above and crossed out when added.</p> </div>

<u>Subtraction</u>	<u>Vocabulary</u> <u>NB:H=hundreds/T=Tens/O=ones</u>	Subtract, subtraction, take-away, less than, less, minus, how many fewer? Count back, Half, find the difference, column method, efficient method, order of operations.	
Objective and Strategies	Concrete	Pictorial	Abstract
Introduction of the = sign /develop understanding of equals.	Introduce the = sign and start with examples like $5 = 5$ using different objects.  Use a balance to illustrate.	Use the = sign in different places in pictorial problems – sometimes have the total box at the beginning. Draw how many more you need to make the sets equal...	Use the = sign in different places $3 - 2 = 1$ $1 = 3 - 2$ Include missing number questions.
Taking away ones. - Horizontal recording of a subtraction calculation.	Use physical objects, counters, cubes etc. to show how objects can be taken away.  $4 - 2 = 2$ Songs using concrete objects/children	Cross out drawn objects to show what has been taken away.  $15 - 3 = 12$	Write a number sentence to record the calculation. $18 - 3 = 15$ $8 - 2 = 6$
Counting back from a given number in ones. - Horizontal recording of a subtraction calculation.	Start with 1 less. Use a number line to match the objects to the numbers. $5 - 3 =$ Lay out 5 cubes on a number line and take away 2. Use bead strings / multilink to physically move back. 	Use a number line to count back in ones. Not bridging 10 then bridging 10. $13 - 4 = 9$  	Mentally count back in ones from a given number. $8 - 3 =$ 8, 7, 6, (use fingers to illustrate the 3) I am left with 5

<p>Use number bonds (also known as fact families) to develop children's understanding of the relationship between addition and subtraction.</p>	<div data-bbox="456 108 654 304"> </div> <p>Use multilink to explore number bonds.</p> <p>If 10 is the whole, and 6 is one of the parts. What is the other part?</p> <p>$10 - 6 =$</p> <div data-bbox="602 389 855 624"> </div>	<p>Use pictorial representation to show the relationship between number bonds.</p> <div data-bbox="981 165 1382 357"> </div> <p>Use picture cards to help create the fact families.</p>	<p>Write down fact families using 3 numbers</p> <p>If I know $9 - 2 = 7$</p> <p>Then $9 - 7 = 2$</p> <p>$2 + 7 = 9$</p> <p>$7 + 2 = 9$</p> <div data-bbox="1890 373 2047 596"> </div>
<p>Find the difference.</p> <p>Horizontal recording of a subtraction calculation.</p>	<p>Compare amounts and objects to find the difference.</p> <div data-bbox="434 724 642 904"> </div> <p>Use cubes to build towers or make bars to find the difference.</p> <p>Use basic bar models with objects to find the difference.</p> <div data-bbox="463 1107 754 1299"> </div>	<p>Count on to find the difference. For example, find the difference between 11 and 5 using a number line.</p> <div data-bbox="943 767 1413 916"> </div> <p>Draw bars to find the difference between 2 numbers.</p> <p>Comparison Bar Models</p> <p>Lisa is 13 years old. Her sister is 22 years old. Find the difference in age between them.</p> <div data-bbox="981 1171 1368 1315"> </div>	<p>Solve word problems involving 'finding the difference'. For example:</p> <p>Hannah has 23 sandwiches, Helen has 19 sandwiches. Find the difference between the number of sandwiches.</p> <div data-bbox="1509 804 2114 1123"> <p>19 in head count up to 23 (may use fingers to help find the difference.)</p> <p>20,21,22,23</p> <p>The difference is 4.</p> </div> <p>If I spend 13p and give the shop keeper 20p, how much change will I have?</p>

<p>Counting back in steps of ones and tens.</p> <p>- Horizontal recording of a subtraction calculation.</p>	<p>Use multilink, Base 10, bundles of objects, etc. to subtract a two digit number from another number.</p> 	<p>Subtract on a number line by counting back in ones and tens. For example, $57 - 23 = 34$</p>  <p>Take the ones away first then the tens.</p> 	<p>Mentally count back in ones and multiples of tens to subtract a two digit number.</p> <div data-bbox="1682 156 2125 351"><p>57-23=</p><p>I know 57-3=54.</p><p>54-20=34</p></div> <p>Could use a 100 square for Support.</p>			
<p>Use partitioning to subtract two or three digit numbers. This will move onto column subtraction method without exchanging.</p> <p>Column method.</p> <p>TO - O TO - TO HTO - TO HTO - HTO ETC.</p>	<p>Use concrete objects as bundles to subtract groups of hundreds / tens / ones.</p>   <p>132 - 22 children physically take away the ones then the tens</p>	<p>Drawing base 10/place value coins to help them move from the concrete to the abstract.</p>  	<p>Write number sentences to show the partitioning of numbers. For example:</p> <p>$57 - 34$</p> <div data-bbox="1494 873 2085 989"><table><tr><td>$50 + 7$</td><td>$\begin{array}{r} 70\ 5 \\ -40\ 2 \\ \hline 30\ 3 \end{array}$</td><td>$\begin{array}{r} 80\ \text{and}\ 7 \\ -50\ \text{and}\ 3 \\ \hline 30\ \text{and}\ 4 = 34 \end{array}$</td></tr></table></div> <p>$20 + 3 = 23$</p> <p>Mentally use the following method, which subtracts the ones then the tens.</p> <p>45 -23 22</p>	$50 + 7$	$\begin{array}{r} 70\ 5 \\ -40\ 2 \\ \hline 30\ 3 \end{array}$	$\begin{array}{r} 80\ \text{and}\ 7 \\ -50\ \text{and}\ 3 \\ \hline 30\ \text{and}\ 4 = 34 \end{array}$
$50 + 7$	$\begin{array}{r} 70\ 5 \\ -40\ 2 \\ \hline 30\ 3 \end{array}$	$\begin{array}{r} 80\ \text{and}\ 7 \\ -50\ \text{and}\ 3 \\ \hline 30\ \text{and}\ 4 = 34 \end{array}$				

Column subtraction method with exchanging.	<p>Use of counters may still be used with a place value chart. Always start by subtracting the ones.</p> <div><div>72 - 47</div><div></div></div> <div><div><div>72 - 47</div><div></div></div><div><div>232 - 114</div><div></div></div></div> <div>Draw a place value chart and draw representations of counters. Always start by subtracting the ones.</div> <div><div><div>67 12</div><div>56 -</div><div>16</div></div><div><div>67 12</div><div>- 47</div><div></div></div></div>
Extend larger numbers and decimals.	<div>2037—485 = 1552</div> <div><div></div><div></div><div></div></div>
Extend larger numbers and decimals.	<div><div>932 - 457 becomes</div><div><div><div>8 12 1</div><div>9 3 2</div><div>- 4 5 7</div><div>4 7 5</div></div><div><div>1 8 6 7 1 1</div><div>- 5 4 5 6</div><div>1 3 2 5 5</div></div><div><div>1 7 8 9 10 1 1</div><div>- 5 4 5 6</div><div>1 2 5 5 5</div></div></div></div>