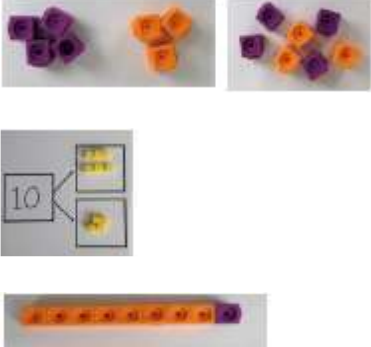
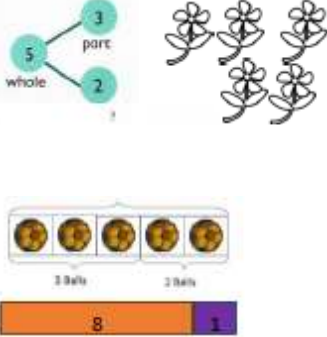

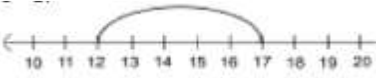
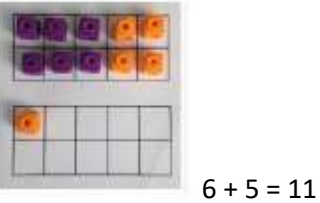
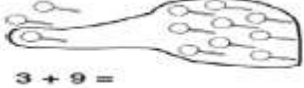


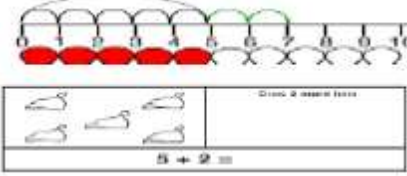

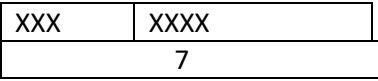


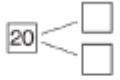


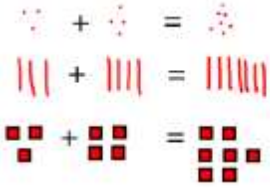
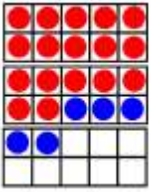
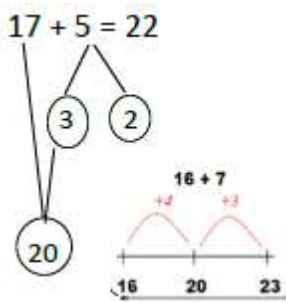

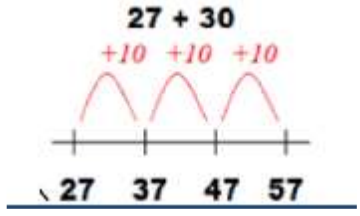
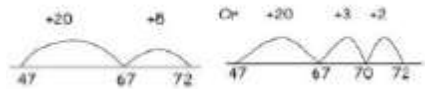
Reay Calculation Policy – Addition and Subtraction

Objective/ strategy	Concrete	Pictorial	Abstract
<p>Combining two parts to make a whole: part-whole model</p>	 <p>Use part part whole model. Use cubes to add two numbers together as a group or in a bar.</p>	 <p>Use pictures to add two numbers together as a group or in a bar.</p>	<p>Use the part-part whole diagram as shown above to move into the abstract.</p>
<p>Starting at the bigger number and counting on</p>	 <p>Start with the larger number on the bead string and then count on to the smaller number , 1 by 1 to find the answer.</p>	<p>$12 + 5 = 17$</p>  <p>Start at the larger number on the number line and count on in ones or in one jump to find the answer.</p>	<p>$5 + 12 = 17$ Place the larger number in your head and count on the smaller number to find your answer.</p>
<p>Regrouping to make 10. This is a useful skill for column addition later and for</p>	 <p>$6 + 5 = 11$</p>	 <p>$3 + 9 =$</p> <p>Use pictures or a number line. Regroup or partition the smaller number using the part part whole model to make 10.</p>	<p>$7 + 4 = 11$ If I am at seven, how many more do I need to make 10? How many more do I add on now?</p>



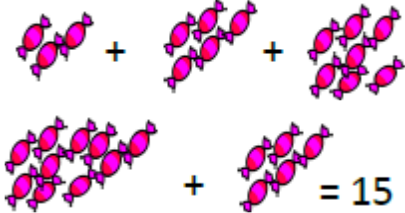
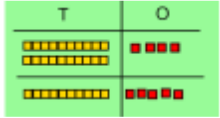

Reay Calculation Policy – Addition and Subtraction

<p>quick mental addition</p>	<p>Start with the bigger number and use the smaller number to make 10. Break the smaller number into two parts. Use ten frames or beads</p>		
<p>Represent & use addition facts and related subtraction facts within 20</p>	 <p>2 more than 5 is 7 2 less than 7 is 5</p>		<p>Emphasis should be on the language '1 more than 5 is equal to 6.' '2 more than 5 is 7.' '8 is 3 more than 5.'</p>
<p>Use the bar model to represent addition facts and the inverse</p>	 <p>$3+4=7$ $7-3=4$ $7-4=3$</p>	 <p>$3+4=7$ $7-4=3$ $7-3=4$</p>	 <p>$23+25=48$ $?-23=25$ $?-25=23$</p>
<p>Use known number facts to make new number facts starting with Part part whole diagrams</p>	 <p>Children explore ways of making numbers within 20</p>	 <p>$\square + \square = 20$ $20 - \square = \square$ $\square + \square = 20$ $20 - \square = \square$</p>	<p>$\square + 1 = 16$ $16 - 1 = \square$ $1 + \square = 16$ $16 - \square = 1$</p>
<p>Using known facts to develop number fact patterns</p>	<p>$\square\square + \square\square = \square\square\square\square$</p> <p>$\square\square\square + \square\square\square = \square\square\square\square\square$</p>	<p>Children draw representations of H,T and O</p>	<p>$3+4=7$ Leads to $30+40=70$ Leads to $300+400=700$</p>

Reay Calculation Policy – Addition and Subtraction

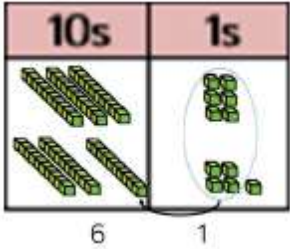
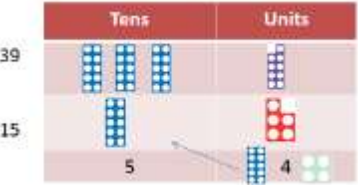
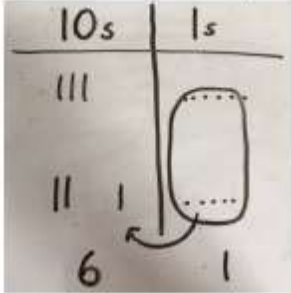
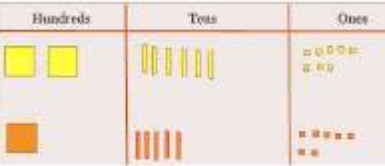
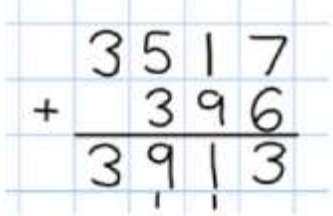
			
<p>Add a two digit number and ones</p>	<p>$17 + 5 = 22$ Use ten frame to make ten</p>  <p>Children explore the pattern. $17 + 5 = 22$ $27 + 5 = 32$</p>	<p>Use part part whole and number line to model.</p> 	<p>$17 + 5 = 22$ Explore related facts $5 + 17 = 22$ $22 - 5 = 17$ $22 - 17 = 5$</p>
<p>Add a 2 digit number and tens</p>	 <p>Explore that the ones digit does not change</p>		<p>$27 + 10 = 37$ $27 + 20 = 47$ $27 + \square = 57$</p>
<p>Add 2 digit numbers using informal methods</p>	<p>Model using dienes , place value counters and numicon</p>	<p>Use number line and bridge ten using part whole if necessary.</p> 	<p>Partition numbers to add ones and tens separately and then recombine $25 + 47$ $20 + 5$ $40 + 7$</p>

Reay Calculation Policy – Addition and Subtraction

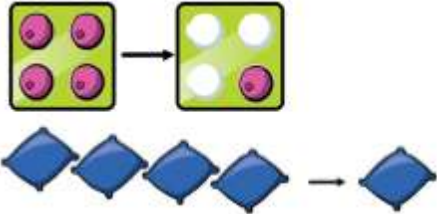
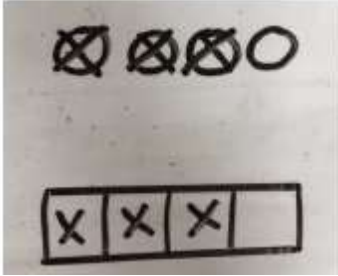
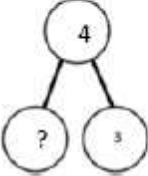
			$20 + 40 = 60$ $5 + 7 = 12$ $60 + 12 = 72$
Add three 1-digit numbers	<p>Combine to make 10 first if possible, or bridge 10 then add third digit</p> 	<p>Regroup and draw representation</p> 	<p>Combine the two numbers that make/ bridge ten then add on the third.</p> $\begin{array}{r} \textcircled{4} + 7 + \textcircled{6} = \boxed{10} + \boxed{7} \\ \quad \quad \quad \underline{10} \quad \quad \quad \\ \quad \quad \quad = \boxed{17} \end{array}$
Column Addition—no regrouping	<p>Model using dienes or numicon</p>  	<p>Children draw representations of dienes to record number sentences</p>	$33 + 24 =$ $50 + 7 = 57$
Add two 2-digit numbers with regrouping			

Add together the ones first, then the tens.


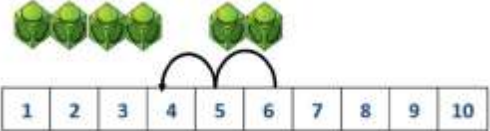
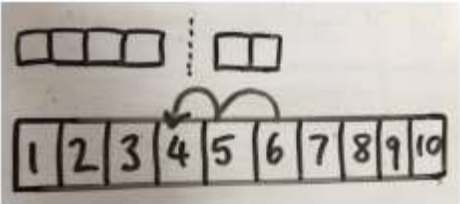
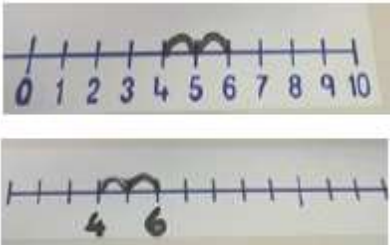
Reay Calculation Policy – Addition and Subtraction

	 <p>Exchange ten ones for a ten. Model with numicon and dienes</p> 	 <p>Children to show how ten ones are moved over to the tens column</p>	<p>45 + 27 = 40 + 20 + 12 = 70 + 2</p> <p>Looking for ways to make 10.</p> <p>36 + 25 =</p> <p>30 + 20 = 50 5 + 5 = 10 50 + 10 + 1 = 61</p> <p>1 5 36</p> <p>Formal method:</p> $\begin{array}{r} +25 \\ 36 \\ \hline 61 \\ 1 \end{array}$
<p>Add numbers with up to 4 digits</p>	<p>Children continue to use dienes or to add, exchanging ten ones for a ten and ten tens for a hundred and ten hundreds for a thousand.</p> 	<p>Draw representations of the dienes grid</p>	 <p>Continue from previous work to carry hundreds as well as tens. Relate to money and measures.</p>


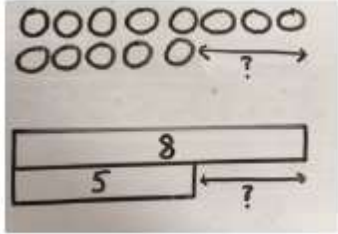
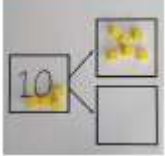
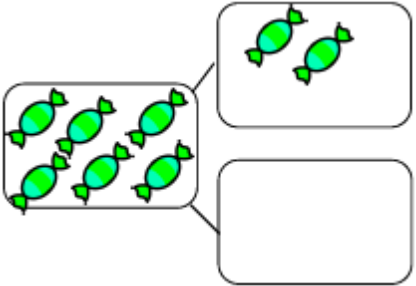

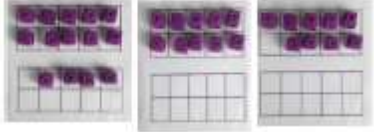
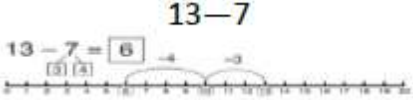
Reay Calculation Policy – Addition and Subtraction

<p>Add numbers with more than 4 digits. Add decimals with 2 decimal places, including money.</p>			$\begin{array}{r} 72.8 \\ + 54.6 \\ \hline 127.4 \end{array}$ $11 \quad \begin{array}{r} \pounds 23.59 \\ + \pounds 7.55 \\ \hline \pounds 31.14 \end{array}$				
			$\begin{array}{r} 81,059 \\ 3,668 \\ 15,301 \\ + 20,551 \\ \hline 120,579 \\ \small \begin{array}{r} \\ \end{array} \end{array}$ $\begin{array}{r} 23.361 \\ 9.080 \\ 59.770 \\ + 1.300 \\ \hline 93.511 \\ \small \begin{array}{r} \\ \end{array} \end{array}$ <p>Insert zero for place holders</p>				
<p>SUBTRACTION Subtracting with objects</p>	<p>Physically removing and taking away objects from the whole</p> 	 <p>Children draw objects that they are using and cross some out. A bar model can also be used</p>	<p>$4 - 3 =$</p> <p>$\square = 4 - 3$</p> <table border="1" data-bbox="1630 1094 1883 1161"> <tr><td colspan="2">4</td></tr> <tr><td>3</td><td>?</td></tr> </table> 	4		3	?
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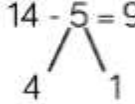

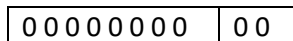
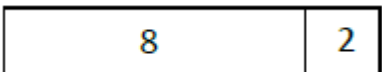
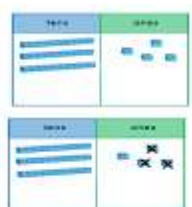

Reay Calculation Policy – Addition and Subtraction

	<p>Move the beads along the bead string as you count backwards.</p> 		
<p>Subtracting using a numberline</p>	 <p>Counting back using number lines or tracks $6-2=4$</p>	<p>Children represent what they see pictorially. E.g</p> 	<p>Children represent number sentence on a numberline. Encourage children to use an empty number line</p> 


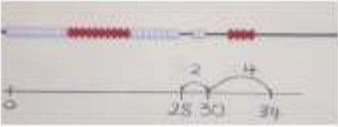
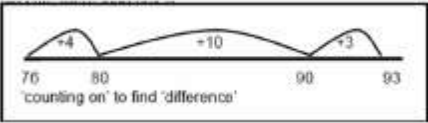
Reay Calculation Policy – Addition and Subtraction

<p>Finding the difference</p>	<p>Finding the difference using objects</p> <p>Calculate the difference between 8 and 5</p> 	 <p>Children draw the objects they have used to calculate it. Or represent as a bar model.</p>	<p>Find the difference between 8 and 5.</p> <p>$8 - 5$, the difference is <input type="text"/></p> <p>Children to explore why $9 - 6 = 8 - 5 = 7 - 4$ have the same difference.</p>
<p>Represent and use number bonds and related subtraction facts within 20</p> <p>Part Part Whole model</p>	 <p>Link to addition. Use PPW model to model the inverse.</p> <p>If 10 is the whole and 6 is one of the parts, what is the other part? $10 - 6 = 4$</p>	<p>Use pictorial representations to show the part.</p> 	 <p>Move to using numbers within the part whole model.</p>
<p>Make 10</p>	<p>Make 14 on the ten frame. Take 4 away to make ten, then take one more away so that you have taken 5.</p> <p>$14 - 5 = 9$</p> 	<p>Jump back 3 first, then another 4. Use ten as the stopping point.</p> 	<p>How many do we take off first to get to 10? How many left to take off?</p> <p>$16 - 8 =$</p>

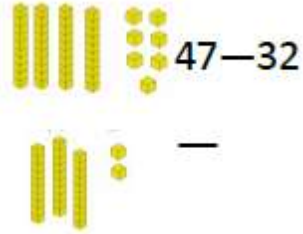
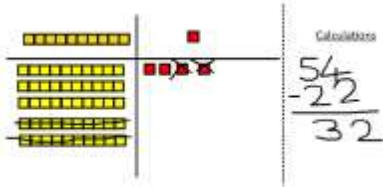
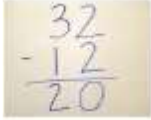
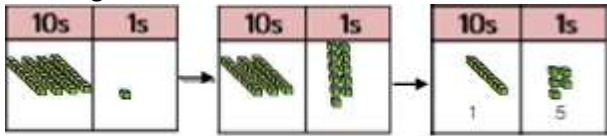


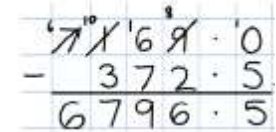
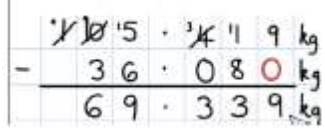
Reay Calculation Policy – Addition and Subtraction

			<p>Children to show how they can make 10 by partitioning the subtrahend.</p> $14 - 5 = 9$  $14 - 4 = 10$ $10 - 1 = 9$
<p>Bar model</p>			$10 = 8 + 2$ $10 = 2 + 8$ $10 - 2 = 8$ $10 - 8 = 2$ 
<p>Partitioning to subtract without regrouping.</p>	<p>Use Dienes to show how to partition the number when subtracting without regrouping</p> 	<p>Children draw representations of Dienes and cross off.</p>  $43 - 21 = 22$	$43 - 22 = 21$

Reay Calculation Policy – Addition and Subtraction

	 <p>34- 13 =</p>		
<p>Make ten strategy Progression should be crossing one ten, crossing more than one ten, crossing the hundreds.</p>	<p>34—28 Use a bead bar or bead strings to model counting to next ten and the rest.</p> 	<p>Use a number line to count on to next ten and then the rest.</p> 	<p>93—76 = 17</p>
<p>Counting on to find a small difference by bridging a multiple of 10</p>	<p>73-68 Using a 100 square to identify the closeness of the numbers and count on from the smaller one</p>	<p>Using a number line to create two jumps – 68 to 70 = 2 70 to 73 = 3 73-68 = 5</p>	<p>Using number bond knowledge to make two jumps mentally, counting on from the smaller number to the larger number</p>

Reay Calculation Policy – Addition and Subtraction

<p>Column subtraction without regrouping</p>	 <p>47-32</p> <p>Use base 10 or Numicon to model</p>	<p>Draw representations to support understanding</p> 	
<p>Subtraction with regrouping</p> <p>Subtraction using increasingly large and more complex numbers and decimal values.</p>	<p>Column method using dienes and having to exchange</p> 	 <p>Represent the dienes pictorially remembering to show the exchange</p>	<p>Formal column method. Children must understand that when they have exchanged the 10 they still have 41 because $30 + 11 = 41$</p>   

Reay Calculation Policy – Addition and Subtraction