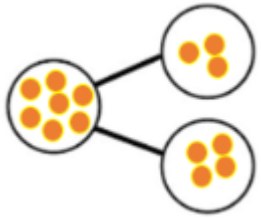
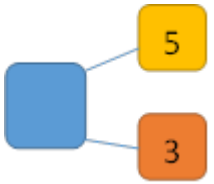
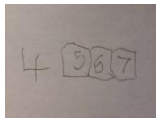
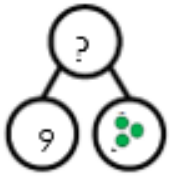
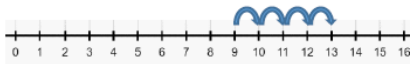
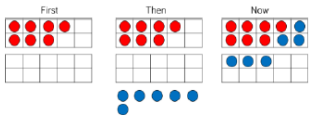
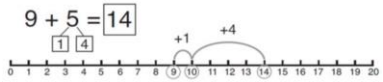
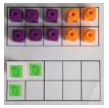
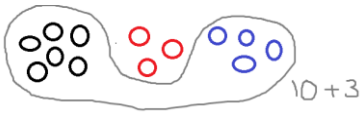
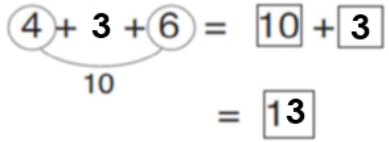
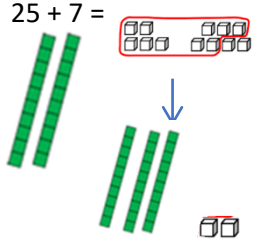
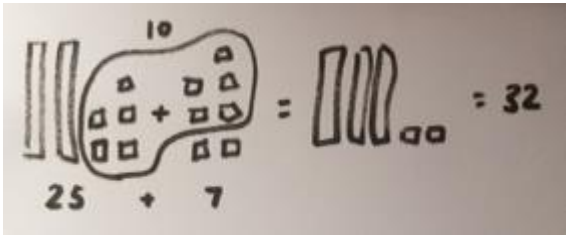
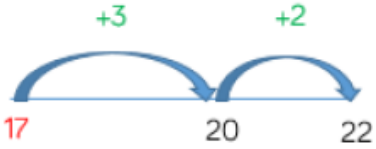
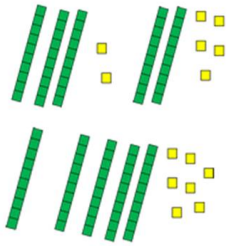
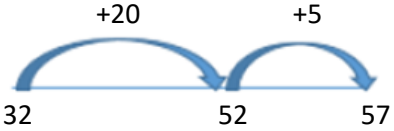
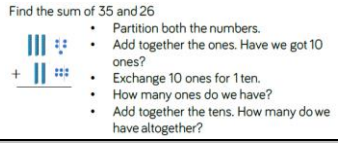
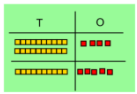
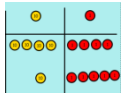
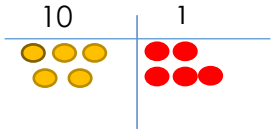
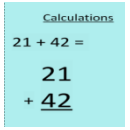
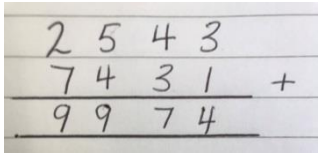
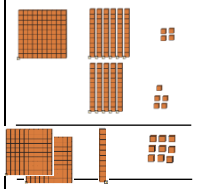
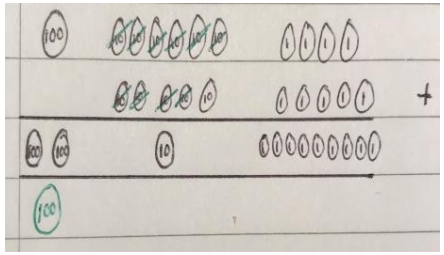
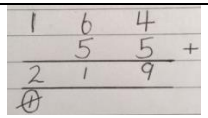
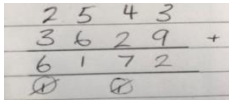
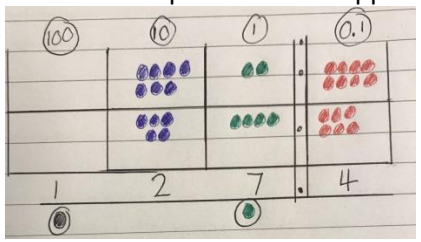
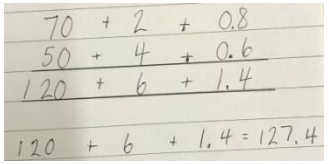
Progression in Calculation – Addition

Foundation Stage			
Objective and Strategies	**Concrete**	**Pictorial**	**Abstract**
Add two single-digit numbers. Combining two groups (parts) to find the total (whole)	Use variety of concrete objects (everyday objects and manipulatives)  Count them all to find the total	Represent the apparatus pictorially 	Use the part-part-whole diagram with concrete and pictorial examples 5 and 3 is the same as 8 5 + 3 = 8 
Counting on to find the total.	A line/tower of apparatus which encourages  the children to count on 	First  Later 	Using number tracks  
Year 1			
Add one and two-digit numbers (including zero) within 20. By counting on	Develop pupil's understanding of commutativity of addition, also their understanding that counting on from the larger number is more efficient. Make both the sets and hide the first set when counting on. 	As a part – whole model 	Using number lines  9 + 4 = 13 4 + 9 = 13 13 = 9 + 4 13 = 4 + 9

Regrouping to make 10		Children regroup or partition the smaller number to make 10.	
Adding three one-digit numbers	 6 + 3 + 4 = Following on from making 10, make 10 with 2 of the digits (if possible) then add on the third digit.	Pupils draw and regroup 6 + 3 + 4 = 	Combine the two numbers that make 10 and then add on the last number 
Year 2			
Adding a two-digit number and ones	Use number bonds to cross 10s barrier Model how 10 ones can be exchanged for one ten 25 + 7 = 	Draw the apparatus 	Record on a number line 17 + 5 = 
Adding two two-digit numbers (Without regrouping)	32 + 25 = 57 	After pratically using Base 10 blocks, children can draw the apparatus to help them solve additions.	Record on a number line:  By partitioning: 43 + 25 40 + 20 = 60 3 + 5 = 8 60 + 8 = 68

Adding two two-digit numbers (With regrouping)	Use Base 10 to model exchange 	After pratically using Base 10 blocks, children can draw the apparatus to help them solve additions.	By partitioning: 37 + 28 30 + 20 = 50 7 + 8 = 15 50 + 15 = 65
Year 3 and 4			
Addition (Formal without exchanging)	24 + 15= Add together the ones first then add the tens and then the hundreds. Use the Base 10 blocks first before moving onto place value counters.   *It is important that this is modelled alongside the abstract representation.*	After practically using the base 10 blocks and place value counters, children can draw the counters to help them to solve additions.  *It is important that this is modelled alongside the abstract representation.*	 
Addition (Formal including exchanging)	164 + 55 =  Begin with the ones and move across as above. When need to exchange, physically swap for the correct amount. In this case exchanging 10 of the 11 tens for 1 hundred and then leaving a 10. *It is important that this is modelled alongside the abstract representation.*	Children can draw the representations as they like using either place value counters or Base 10 representations. Similar to below for the same problem: 164 + 55 =  *It is important that this is modelled alongside the abstract representation.*	 When using this model, it is very important to continue to discuss what is happening during the process. e.g. we find the sum of 4 and 5 to begin, then when we move across, we are adding 60 and 50. Then the discussion of the exchange and finish by adding the 100 and the extra 100 we have exchanged. 

Year 5 and 6			
Addition (Formal Method)	72.8 + 54.6 = Place value counters are encouraged to be used as they can represent decimal values. They are used for a concrete representation as shown below:  Children are encouraged to begin from the smallest value and to exchange when they have more than 10 of any value.   *It is important that this is modelled alongside the abstract representation.*	72.8 + 54.6 = After practically using the base 10 blocks and place value counters, children can draw the counters to help them to solve additions. When using any form of decimals, getting the place value correct is imperative. Exchaning and carrying cann be completed as in the pictures and different coloured counters help children to explain what is happening.  *It is important that this is modelled alongside the abstract representation.*	72.8 + 54.6 = It is important at this stage that children are confident in partitioning and merging numbers of decimal values. Decomposing the number will help reinforce what is happening as you progress through the calculation:  This will then feed through to the more compact method of adding numbers together: