The Discovery School Calculation Policy - **Year 2 Addition**
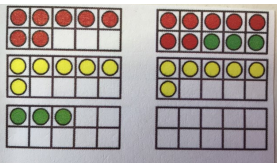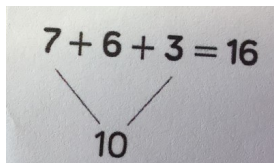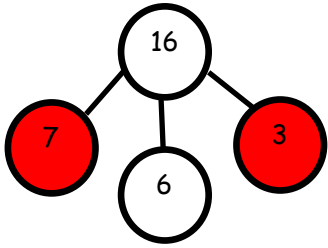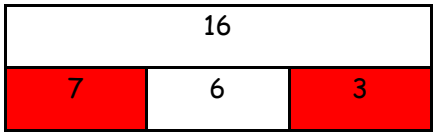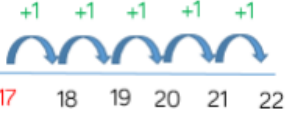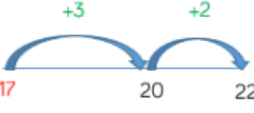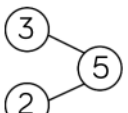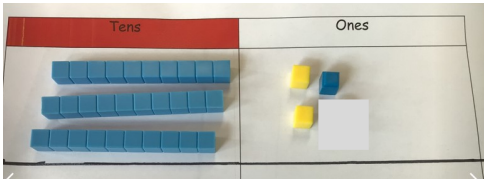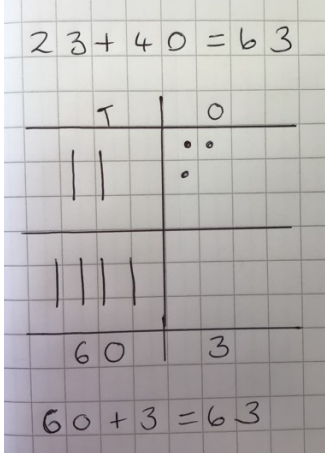
Additional Notes
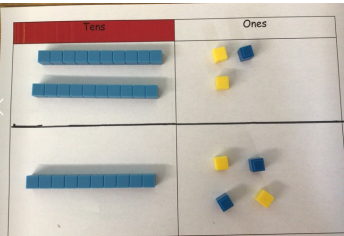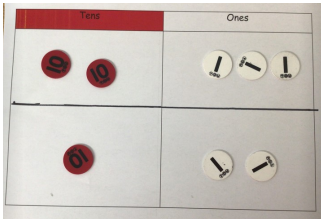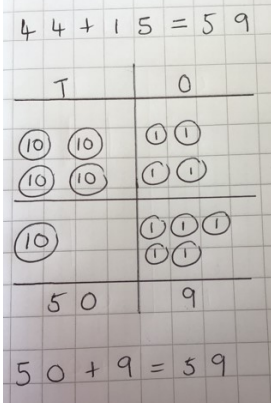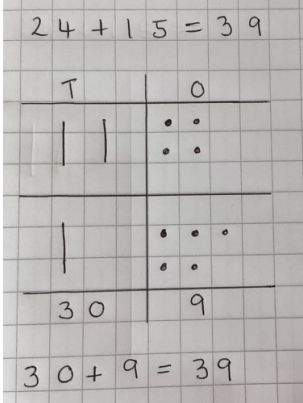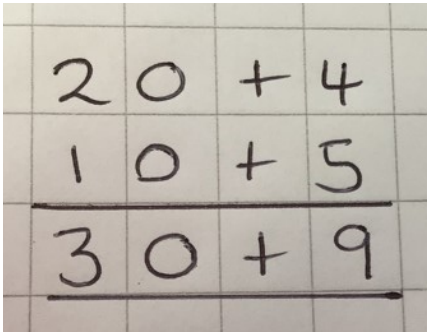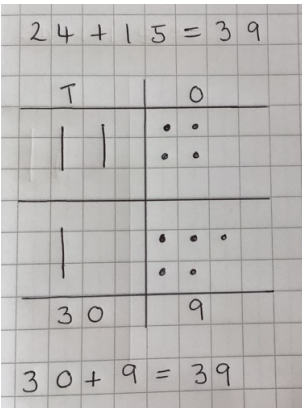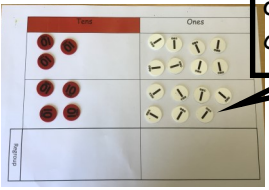
Bar models <u>must</u> be used as a tool for problem solving as this ensures the children understand the structure of the problem.

National Curriculum Objectives

solve problems with addition and subtraction: ▪ using concrete objects and pictorial representations, including those involving numbers, quantities and measures ▪ applying their increasing knowledge of mental and written methods ▪ recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100 ▪ add and subtract numbers using concrete objects, pictorial representations, and mentally, including: ▪ a two-digit number and ones ▪ a two-digit number and tens ▪ two two-digit numbers ▪ adding three one-digit numbers ▪ show that addition of two numbers can be done in any order (commutative) and subtraction of one number from another cannot ▪ recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems.

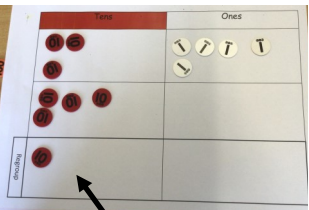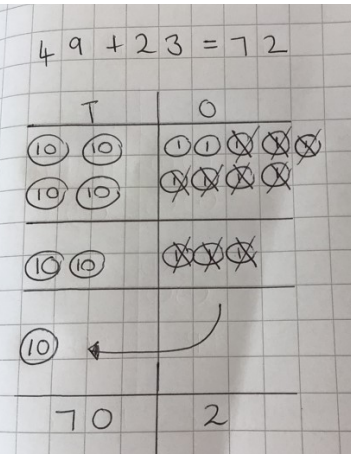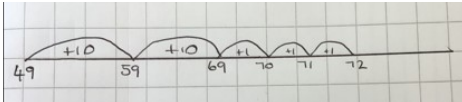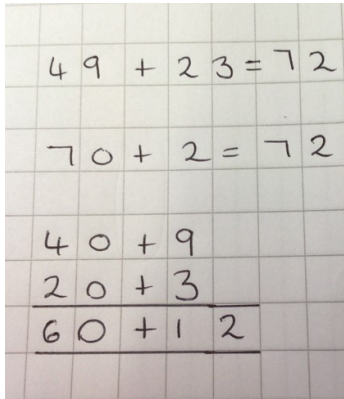| Objective	Concrete	Pictorial	Abstract
Add 3 1 digit numbers	Children to make each number separately using counters and a tens frame. Encourage children to look for the 'bonds' to 10. When they can see the bond they will see the number as 10 and some. 7 + 6 + 3 = 16 / 10 *Show this alongside the abstract to enable children to see the link.* *Children need to look for the most efficient way to add these numbers*	 Colour in the number bonds to 10. This will help children to spot the link more clearly. 7 + 3 = 10 10 + 6 = 16	Use = < and > to compare the number sentences. $5 + 4 + 6 \bigcirc 6 + 5 + 4$
Add a 2 digit number and a 1 digit number.	43 + 5 = Children to make 43 on the bead string using their place value knowledge (40 and 3). Then count on 5. They can get the 5 beads first if this is helpful and it can be supported by a hundred square or number line to support counting. 	17 + 5 = Jumping on in 1's on a number line. 17 18 19 20 21 22 Progressing on to teaching to find the bond if applicable. +3 +2 17 20 22 *We can partition 5 into 3 and 2 and use this to bridge the 10.* 3 / 5 / 2	43 + 8 = 51 43 + 7 = 50 50 + 1 = 51
Add a 2 digit number and tens.	13 + 20 = Children to add the base 10 one stick at a time using the hundred square to support their counting. *The dienes are required to give the children the conceptual understanding.*	This layout must be followed as it lays the foundation for column addition in future years. 23 + 40 = 63 T O 60 3 60 + 3 = 63	Work out : 43 + 40 = 23 + 10 = 63 + 30 =

Objective	Concrete	Pictorial	Abstract
Add a 2 digit number and a 2 digit number) no regrouping)	This should be first introduced using base 10 as this enables the children to see the '10'. This can then progress to counters when they are confident. 30 + 7 = 37 Children to write the total of each column at the bottom along with the total 30 + 5 = 35	*This layout must be followed as it lays the foundation for column addition in future years. This is how the children are expected to layout in their books.* Children should begin representing with dienes and move onto place value counters when secure in conceptual understanding. PV counters will be used in Y3. Dienes to be draw as lines and black dots. The children will find this easier than drawing rectangles and squares which can at times get to large.	*This is how the children would be expected to show this in the abstract form.* *From this* ➝ *To this* Alternative way of presenting the question : Mo has 41 sweets. Whitney has 55 sweets. How many sweets do they have altogether?
Add a 2 digit number and a 2 digit number (with regrouping)	Children need to be introduced to the exchange shop where they take their ten counter and exchange it for ten one. This is a fundamental part of understanding the process of exchanging. 38 + 27 = There are to many ones we need to exchange! Children to lay out counters Ensure children place the 'new' ten in the regroup row. This will support the abstract later on.	*This layout must be followed as it lays the foundation for column addition in future years* 49 + 23 = 72 Ones must be crossed out **with an x** and an arrow drawn to show the ten moving across into the tens column. This is how we show an exchange. A single line is used for subtraction. This can then be modelled on an empty number line. 	Most children will represent the calculation as 49 + 23 = 73 or.. as 7 0 + 2 = 72 This abstract representation could also be explored as it leads into column addition. Mo cycles 49km and Ben cycles 23km. How many km do they cycle in total?