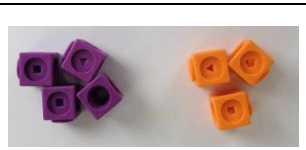
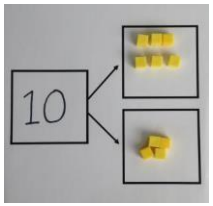
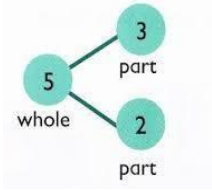
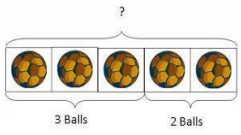
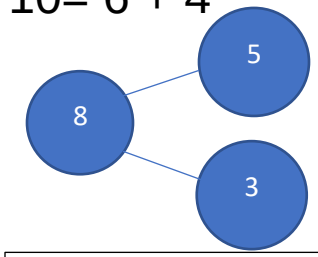
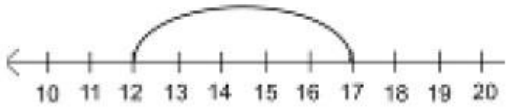
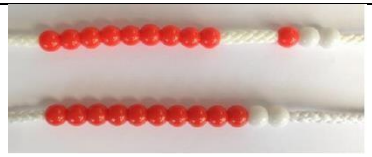
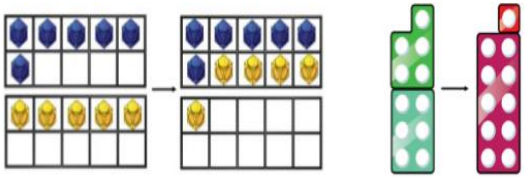
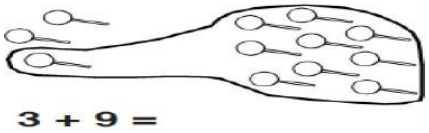
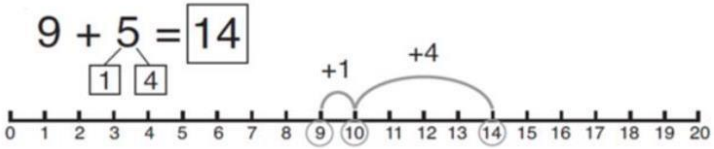
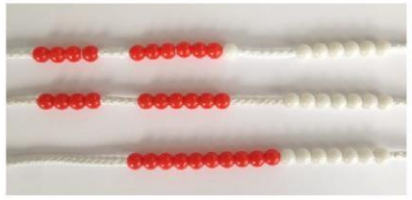
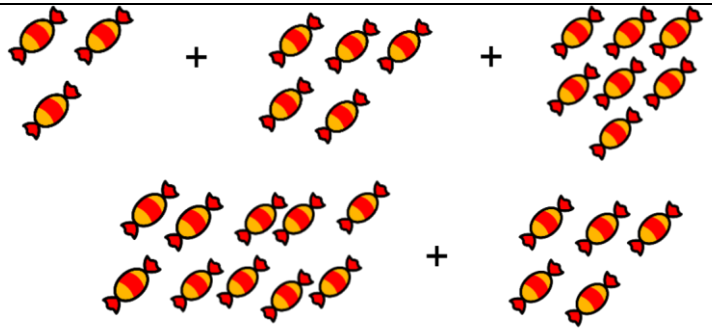
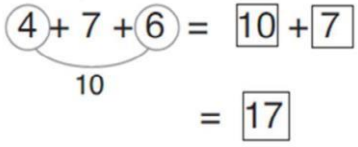
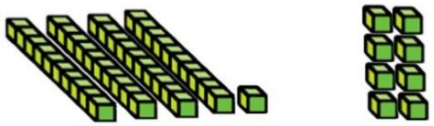
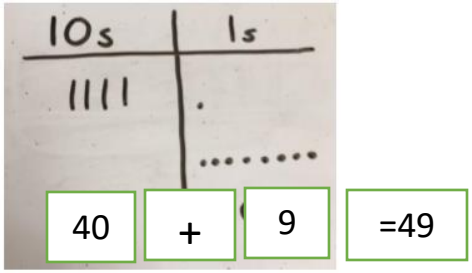
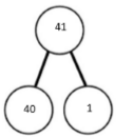
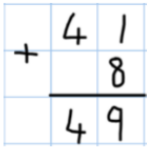
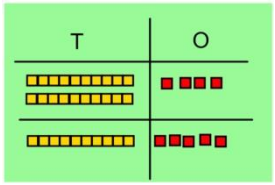
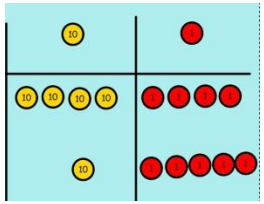
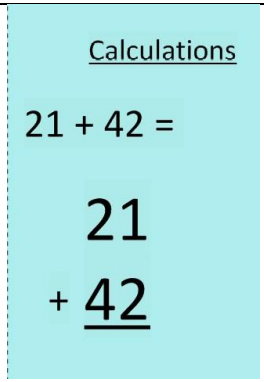
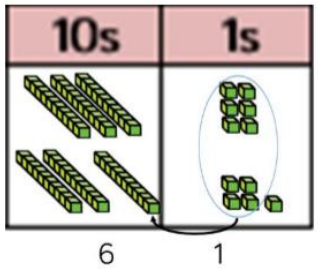
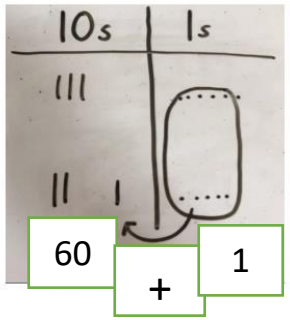
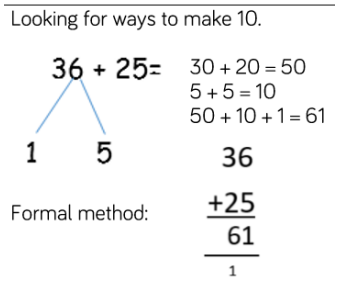
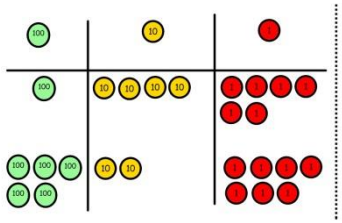
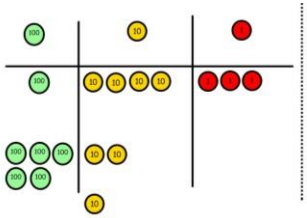
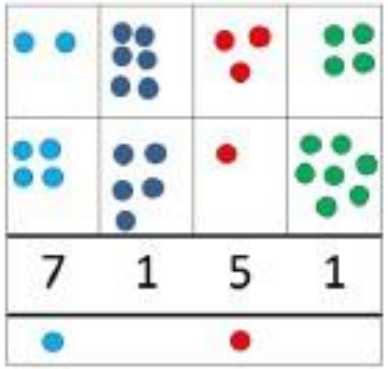
Tollesbury School – Progression in calculations

Addition

Objective and strategies	Concrete	Pictorial	Abstract
Year 1 **Combining two parts to make a whole: part-whole model**	 Use cubes to add two numbers together as a group or in a bar.  	  Use pictures to add two numbers together as a group or in a bar. 	4 + 3 = 7 10= 6 + 4  Part whole models can still be used here as shown above to help move into the abstract.
Year 1 **Starting at the bigger number and counting on.**	 Start with the larger number on the bead string and then count on to the smaller number 1 by 1 to find the answer.	12 + 5 = 17  Start at the larger number on the number line and count on in ones or in one jump to find the answer.	5 + 12 = 17 12+5=17 Encourage children to place the larger number in their head and count on the smaller number to find your answer.

Year 1 **Regrouping to make 10**	 6 + 5 = 11  Start with the bigger number and use the smaller number to make 10.	Use pictures or a number line. Regroup or partition the smaller number to make 10.  3 + 9 =  	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? Children to develop an understanding of the equality e.g. 6 + ? = 11 6 + 5 = 5 + ? 6 + 5 = ? + 4
Year 2 **Adding 3 single digits**	4 + 7 + 6= 17 Put 4 and 6 together to make 10. Add on 7.  Following on from making 10, make 10 with 2 of the digits (if possible) then add on the third digit.	 Add together three groups of objects. Draw a picture to recombine the groups to make 10.	 Combine the two numbers that make 10 and then add on the remainder.

Year 2 **Adding a 1-digit number to a 2-digit number**	Continue to develop understanding of partitioning and place value. 41 + 8 = 	Children to represent the base 10 e.g. lines for tens and dots/ crosses for ones.  	41 + 8  1 + 8 = 9 40 + 9 = 49 
Year 2 **Column method – no regrouping**	24 + 15= Add together the ones first then add the tens. Use the Base 10 blocks first before moving onto place value counters.  	After practically using the base 10 blocks and place value counters, children can draw the counters or base 10 sticks and dots (as above) to help them to solve additions.	
Year 2 **Column method – grouping**	Continue to develop understanding of partitioning and place value. 36 + 25 =  	Children represent the base 10 in a place value chart.  	Looking for ways to make 10.  The formal method will most likely be towards the end of the year.

Year 3 **Column method- regrouping. (up to 3 digits)** **Year 4** **Column method- regrouping. (up to 4 digits)** **Year 5** **Column method- regrouping. (with more than 4 digits) (Decimals- with the same amount of decimal places)** **Year 6** **Column method- regrouping. (Decimals- with different amounts of decimal places)**	Make both numbers on a place value grid.  146 + 527 Although addition is commutative, chn can get used to writing the larger number first when using column addition. Add up the units and exchange 10 ones for one 10.  146 + 527 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, money and decimal place value counters can be used to support learning.	Children can draw a pictorial representation of the columns and place value counters to further support their learning and understanding.  	Start by partitioning the numbers before moving on to clearly show the exchange below the addition. (if chn can move to the column addition method below, do so as quickly as possible) 20 + 5 40 + 8 60 + 13 = 73 As the children move on, introduce decimals with the same number of decimal places and different. Money can be used here. 536 + 85 621 1 1 72.8 + 54.6 127.4 1 1 £ 2 3 . 5 9 + £ 7 . 5 5 £ 3 1 . 1 4 1 1 1 2 3 . 3 6 1 9 . 0 8 0 5 9 . 7 7 0 + 1 . 3 0 0 9 3 . 5 1 1 2 1 2