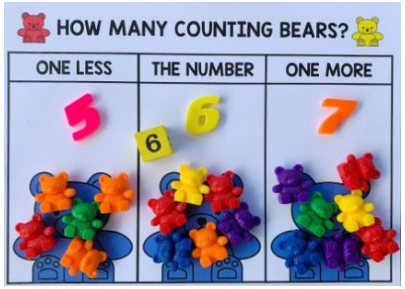
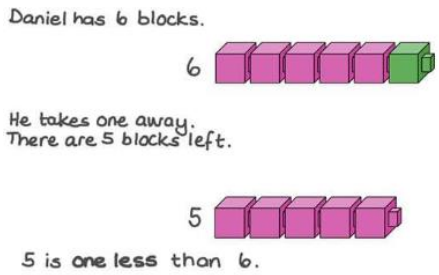
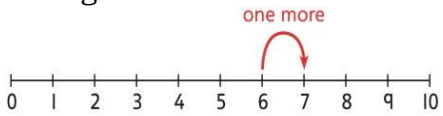
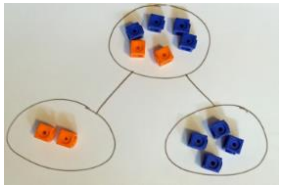
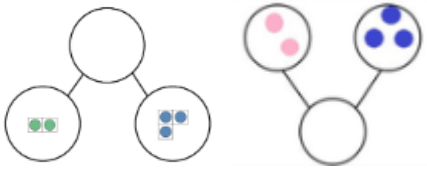
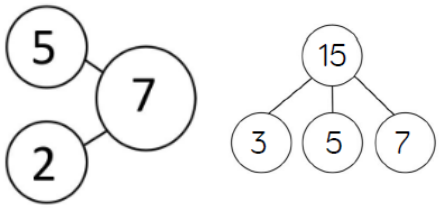
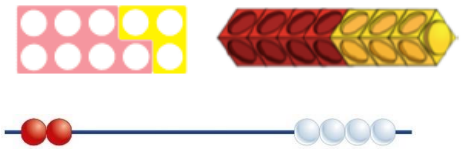
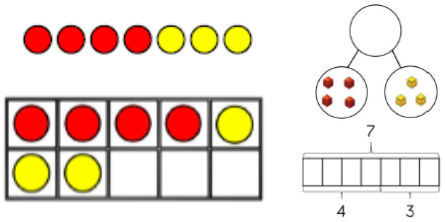
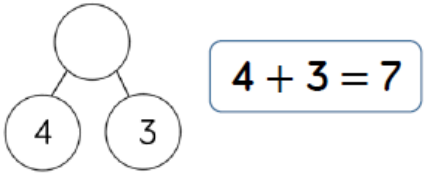
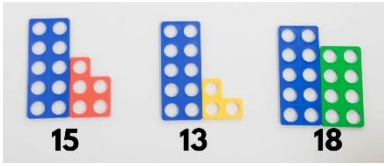
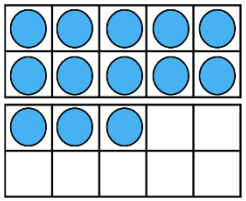
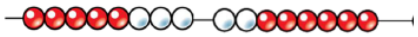
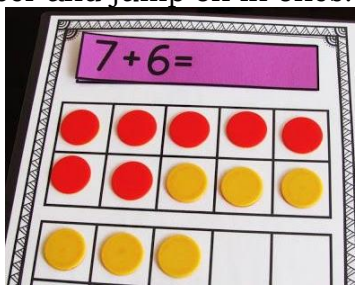
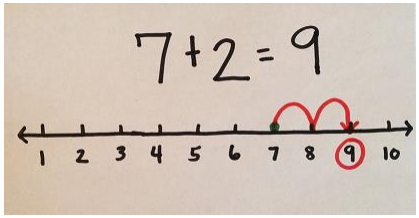
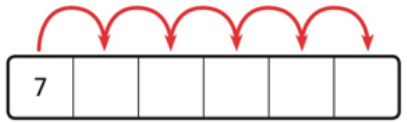
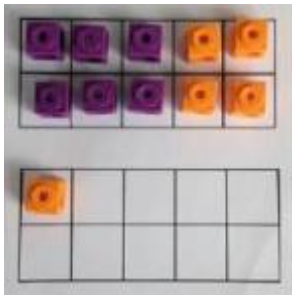
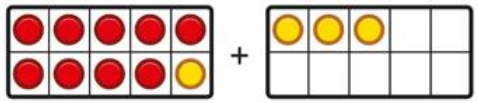
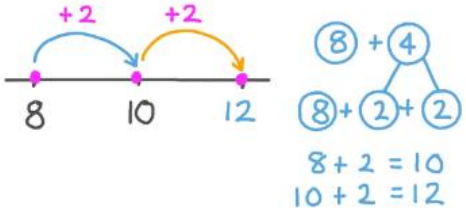
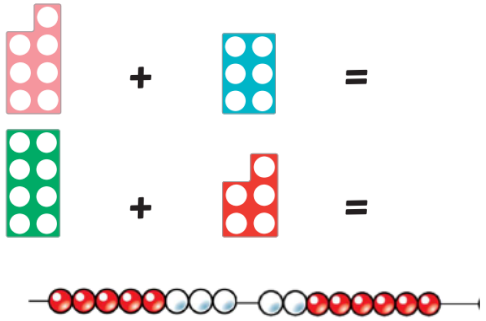
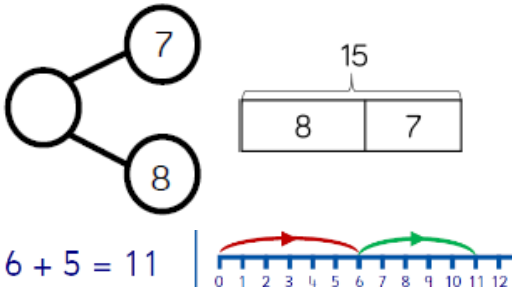
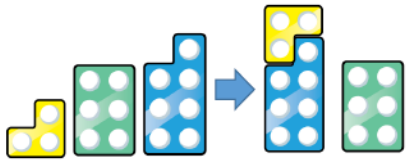
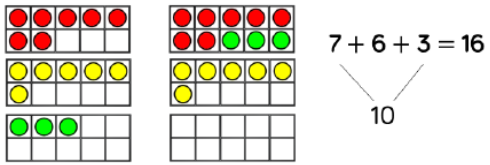
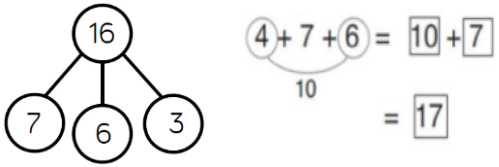
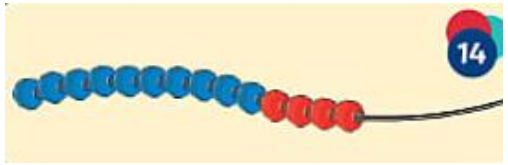
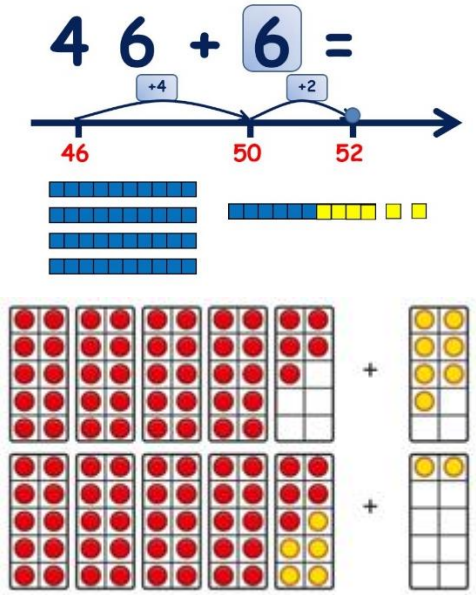
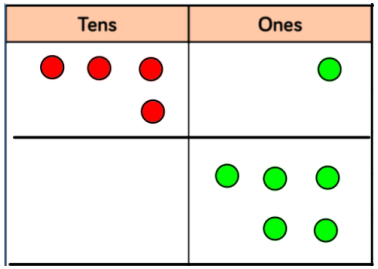
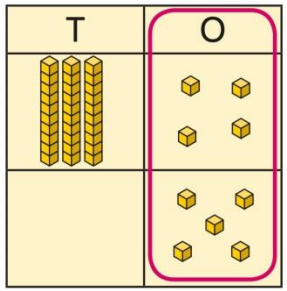
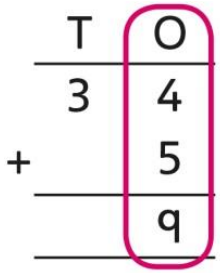
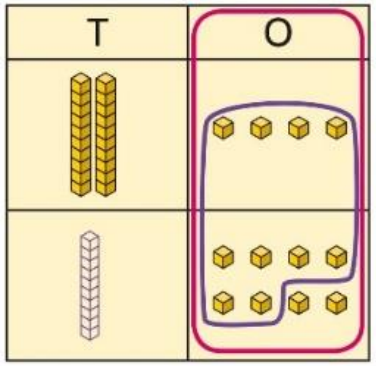
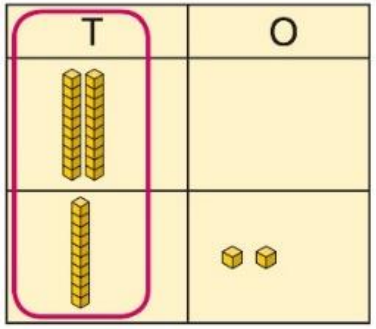
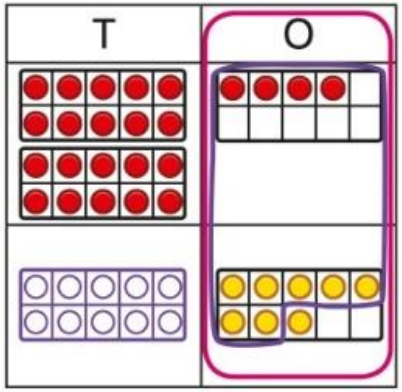
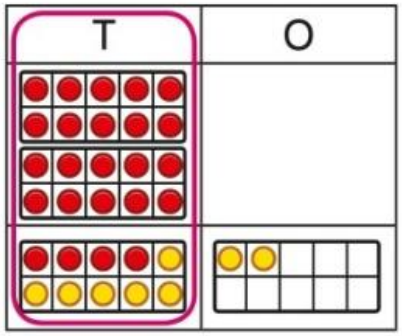
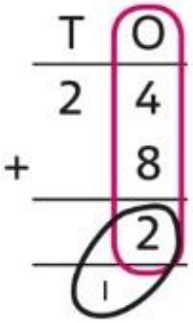
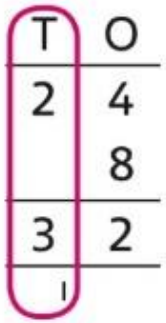
Calculation Policy – Progression in Calculations

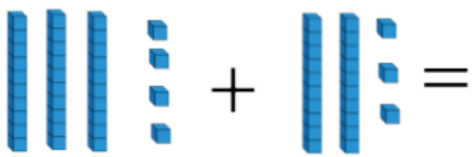
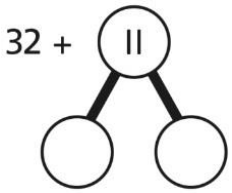
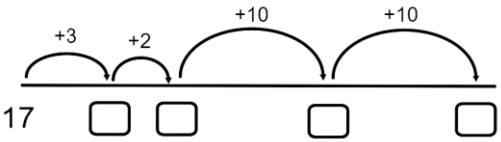
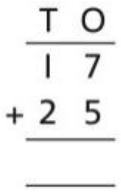
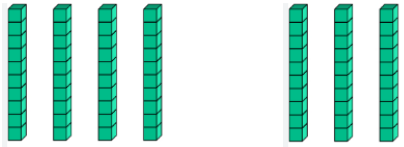
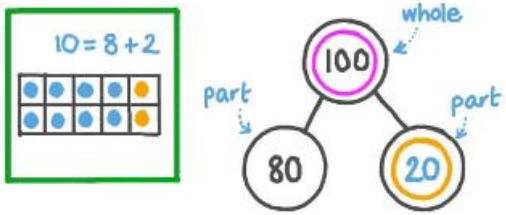
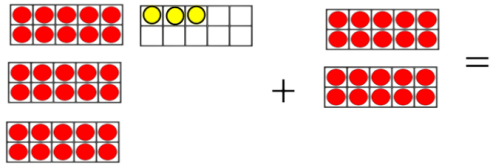
Progression in Calculations - Addition				
Expected Year Group	**Objectives**	**Concrete**	**Pictorial**	**Abstract**
EYFS	Find 1 more than/find 1 less than	Children add one more person or object to a group to find one more or take away one object to find one less. 	Children add one more cube or counter to a group to represent one more.  Children take away one cube or counter from a group to represent one less.  They could then use squares in their book to represent this.	Use a number line to understand how to link counting on with finding one more. 
Year 1	Understand part/whole relationship	Sort a set of people or objects into parts and understand their relationship within the whole. 	Draw pictures to represent the parts and their relationship within the whole. 	Use a part-whole model to represent numbers. 

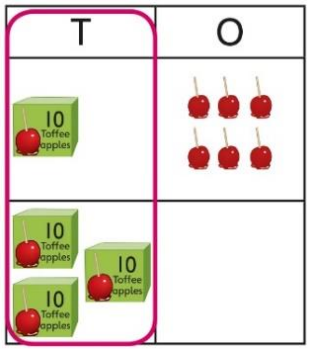
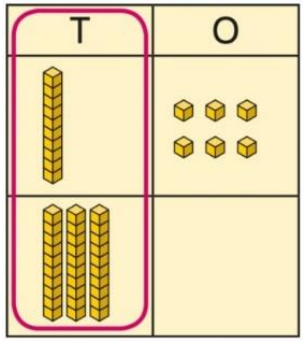
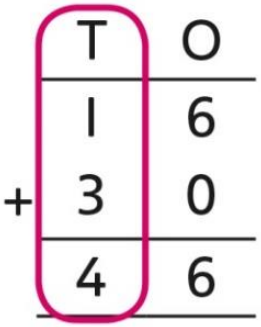
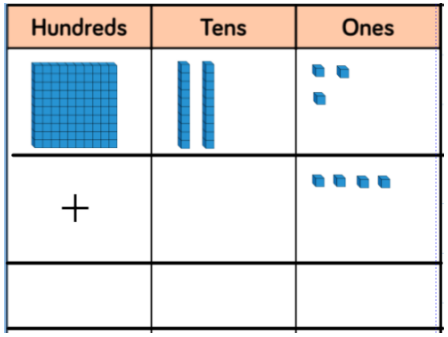
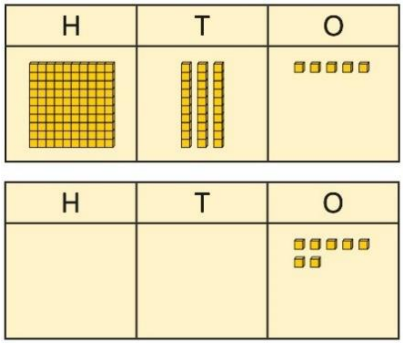
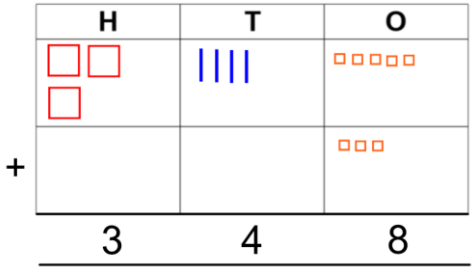
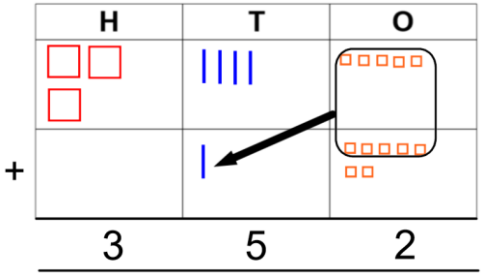
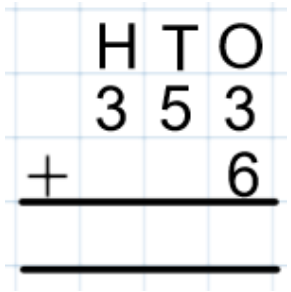
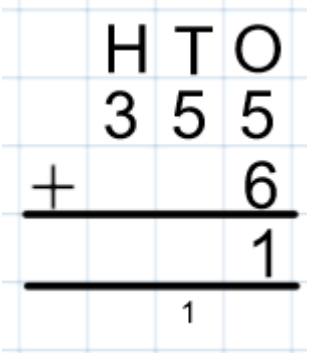
Year 1	Add 1-digit numbers within 10	Using apparatus such as cubes, bead strings and Numicon to add two groups together and break apart again. 	Use five and ten frames, bar models or part whole models to represent key number bonds.  	Use of models alongside written calculation. 
Year 1	Understanding teen numbers as a complete 10 plus more ones	Make groups of 10 and then count the extra ones.  	Use a ten frame to support finding complete sets of 10 and count the extra ones. 	Number sentences to show 10 + ? = ? **1 ten plus 3 ones equals 13.** **10 + 3 = 13**
Year 1	Adding by starting at the bigger number and counting on	Use a bead string to make the start number and then count on in ones.  **8 + 7 = 15**	Use a pictorial representation to show making the larger number first and counting on or use a number line to start at the larger number and jump on in ones.   	Use number lines or number tracks to support counting on.  7 + 5 = ☐

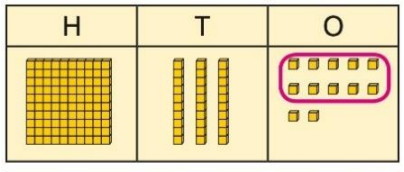
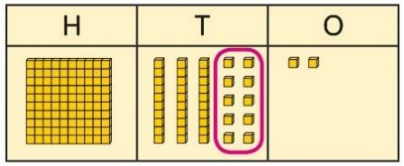
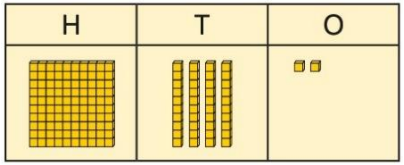
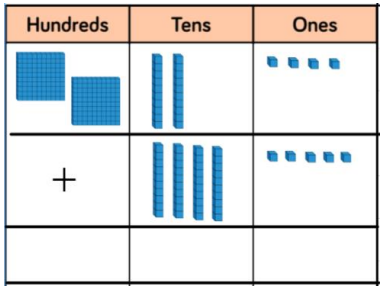
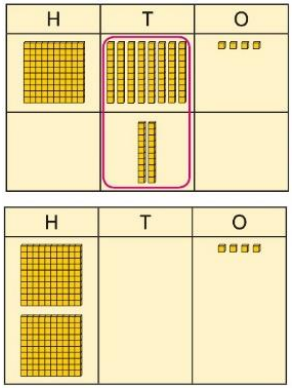
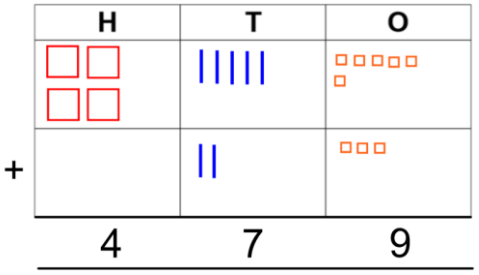
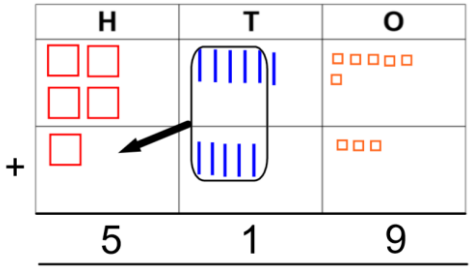
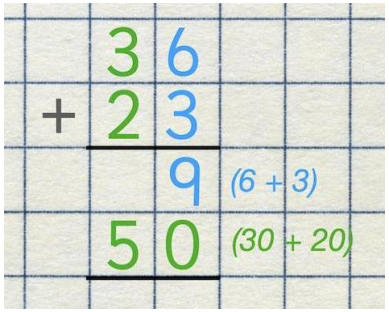
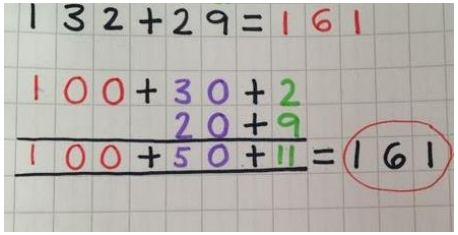
Year 1	Bridging the 10 using number bonds (regrouping to make 10)	Use bead strings or cubes to add on to make 10 first and then count on what is leftover.  Complete 7 + 5 by starting at 7 and counting on 3 to make 10 then add on the additional 2 to make 12.  Complete 6 + 5 by starting at 6 and counting on 4 to make 10 then add on the additional 1 to make 11.	Use pictures of tens frames or a number line to regroup or partition the smaller number using the part-part-whole model to make 10.  9 + 4 can be shown as 9 + 1 + 3 	Use a number line or number track to support the calculation if needed. **7 + 4 = 11** **If I am at seven, how many more do I need to make 10? (3) How many more do I add on now? (1)**
Year 1/2	Add 1 and 2-digit numbers to 20	Use apparatus to support counting on. 	Pictorial representations to support adding within 20. 	Use of number sentences supported by number lines/number tracks where needed. **8 + 7 = 15**

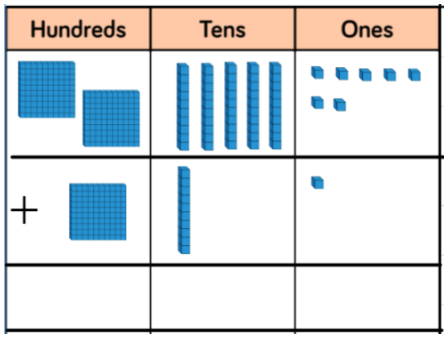
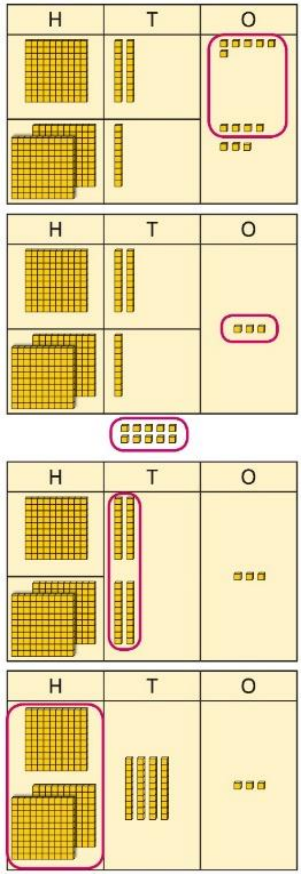
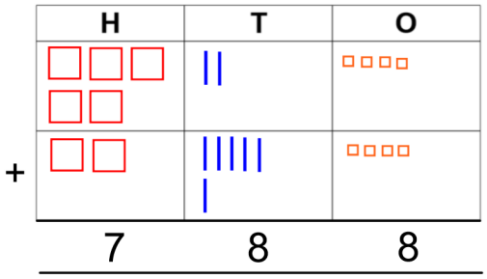
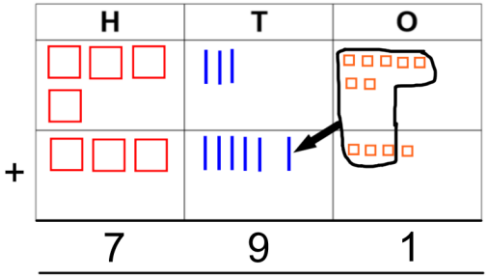
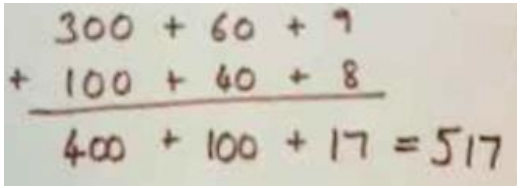
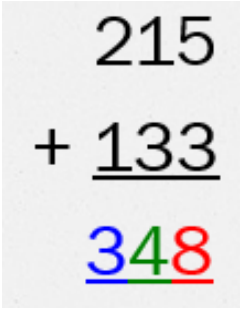
Year 2	Add three 1-digit numbers	Use manipulatives to look for number bonds to 10 or doubles to add the numbers more efficiently. 	Use pictorial representations to look for number bonds to 10 or doubles to add the numbers more efficiently.  	Use part-whole models to support answering of number sentences if required. Children looking for the most efficient method/order to complete the calculation. 
Year 2	Adding a 2-digit number and ones (bridging the ten)	Use bead strings or cubes to add on to make 10 first and then count on what is leftover.  Complete 14 + 8 by starting at 14 and counting on 6 to make 20 then add on the additional 2 to make 22.	Use Base-10 or tens frames or a number line to regroup or partition the smaller number to make the closest multiple of 10 first then count on.  	Use a number line or number track to support the calculation if needed. **27 + 8 = 35** **If I am at twenty seven, how many more do I need to make the next ten? (3) How many more do I add on now? (5)**

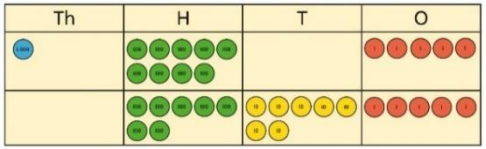
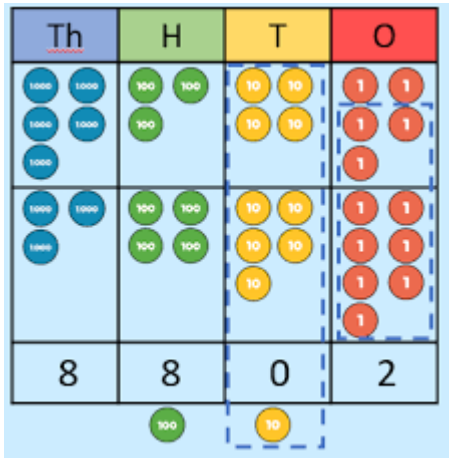
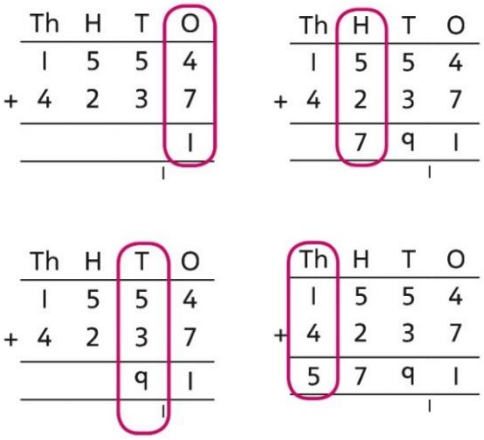
Year 2	Introducing columns: Adding a 1-digit number to a 2-digit number (not bridging a 10)	Place counters on a place value grid to aid addition. 	Using Base-10 tens and ones on a place value grid. 	Using digits set out vertically in columns. 
Year 2	Introducing columns: Adding a 1-digit number to a 2-digit number using exchange	Exchange 10 ones for 1 ten.  	Exchange 10 ones for 1 ten.  	Exchange 10 ones for 1 ten.  

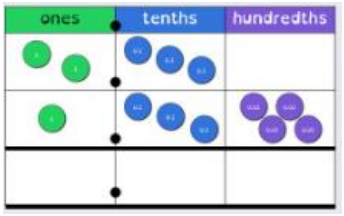
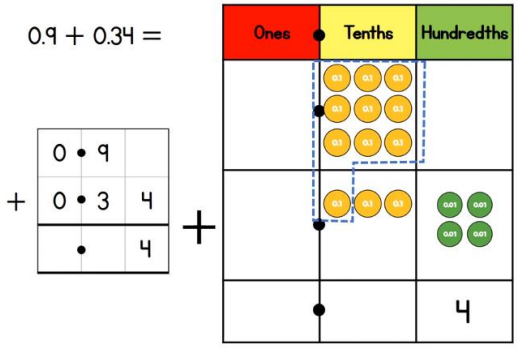
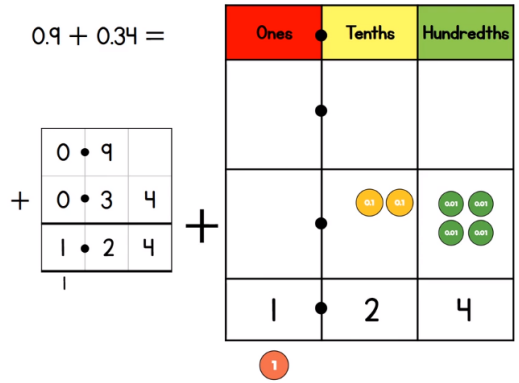
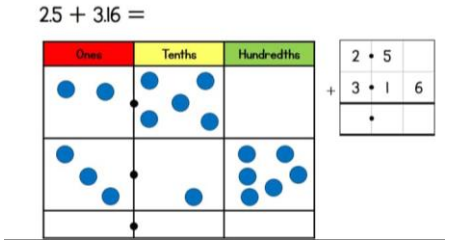
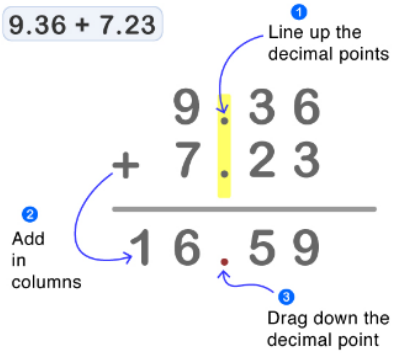
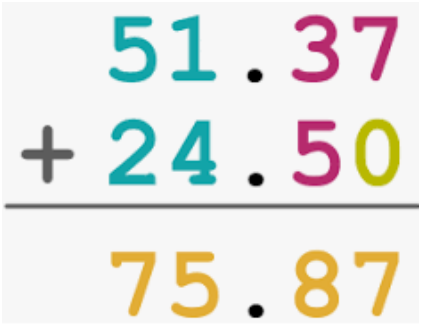
Year 2	Adding two 2-digit numbers	Add the 10s and 1s individually (always start with 1s).  4 + 3 = 7 There are 7 ones in total. 3 + 2 = 5 There are 5 tens in total. 34 + 23 = 57	Add the 10s and 1s individually. Use a part-whole model to support.  11 = 10 + 1 32 + 1 = 33 33 + 10 = 43 32 + 11 = 43	Add the 10s and the 1s individually, bridging 10s where required. A number line can support the calculations.  
Year 2	Adding multiples of 10	Use known number bonds to apply to adding tens.  4 + 3 = 7. So, 4 tens add 3 tens must be 7 tens which is 70.	Use part-whole models or tens frames to support adding multiples of 10.  	Use known number bonds to apply to adding tens. **5 + 2 = 7** **So, 50 + 20 = 70**
Year 2	Adding a 2-digit number and multiples of 10	Add the tens and then re-group.  32 is 3 tens and 2 ones. 20 is 2 tens. There are 5 tens in total and 2 ones. So, 32 + 20 is 52.	Add the tens and then re-group.  30 + 20 = 50 50 + 3 = 53	Add the tens and then re-group. **57 + 30 = ?** **50 + 30 = 80** **80 + 7 = 87** **57 + 30 = 87**

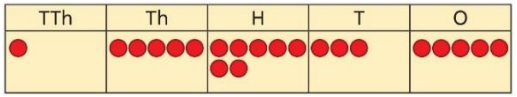
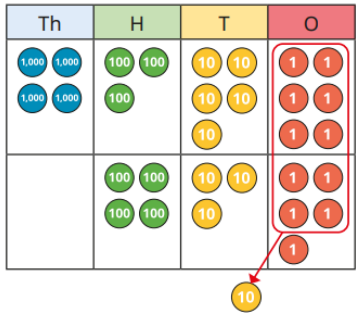
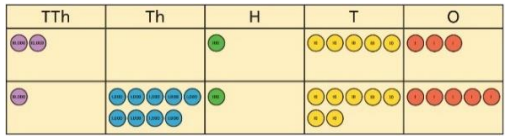
Year 2	Introducing columns: Adding a 2-digit number and multiples of 10	Add the tens using a place value grid to support. 	Add the tens using a place value grid to support. 	Use vertical columns to add the tens. 
Year 3	Add a three-digit number and ones	No exchanging required:  Exchanging required: 1) 	No exchanging required:  Exchanging required: 	Use vertical columns to aid addition. No exchanging required:  Exchanging required: 

		2)   3)  		
Year 3	Add a three-digit number and tens	No exchanging required:  Exchanging required:  	No exchanging required:  Exchanging required:  	Expanded Partitioning Method:  

Year 3	Add a three-digit number and hundreds	No exchanging required:  Exchanging required:  	No exchanging required:  Exchanging required:  	Expanded Partitioning Method: This is set out vertically, in a similar fashion to the traditional form of addition. 215 133 + 8 (5 + 3) 40 (10 + 30) 300 (200 + 100) 348  Formal Column Method (no exchanging):  5 (ones) + 3 (ones) = 8 ones 1 (ten) + 3 (tens) = 4 tens 2 (hundreds) + 1 (hundred)= 3 (hundreds)

				Formal Column Method (exchanging required): 226 +193 419 1 Start with the least significant digits (ones) 6 + 3 = 9. Add the tens (2 + 9 = 11). Because the answer is a two digit number, it has to be exchanged. Add the hundreds (2 + 1 = 3, + the '1' being exchanged = 4)
Year 4	Add numbers with up to 4 digits	Use place value equipment on a place value grid to support addition. 	Draw a pictorial representation of the columns and place value counters to further support addition particularly where exchanging is required. 	Use the formal column method to add (including exchanges). 

Year 4	Add decimals with 2 decimal places, including money.	Introduce decimal place value counters and model how to exchange for addition.    	Pictorial representations of a decimal place value grid.  	Adapt the formal column method for use with decimal numbers. Line digits up according to place value.   Where decimals have a different number of digits after the decimal point, insert a zero in the gap as a place holder. 

Year 5/6	Add numbers with more than 4 digits	Use place value equipment to support additions.  **Add a row of counters onto the place value grid to show 15,735 + 3,024.** Continue to use concrete apparatus to reinforce the idea of exchanging with higher numbers.  	Use place value equipment alongside written methods.  TTh Th H T O 2 0 1 5 3 + 1 9 1 7 5 3 9 3 2 8 1	Use of formal column addition, including exchanging. TTh Th H T O 1 9 1 7 5 + 1 8 4 1 7 3 7 5 9 2 1 1
Year 5	Add numbers with up to 3 decimal places	Use strategies from year 4 but adapt for longer/more varied decimal numbers.	Use strategies from year 4 but adapt for longer/more varied decimal numbers.	Use strategies from year 4 but adapt for longer/more varied decimal numbers.
Year 6	Add several numbers of increasing complexity, including adding money, measure and decimals with different numbers of decimal points.			Adapt the formal written method previously used to include several numbers. 81,059 3,668 15,301 + 20,551 120,579 1 1 1 1

				For unlike decimals, line up the decimal points and insert a zero in the gap as a place holder.