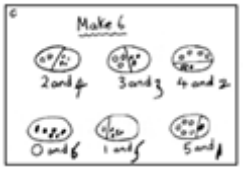
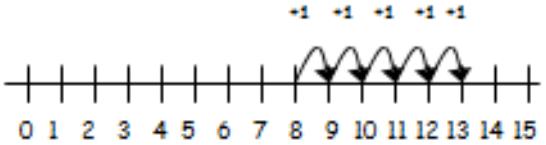
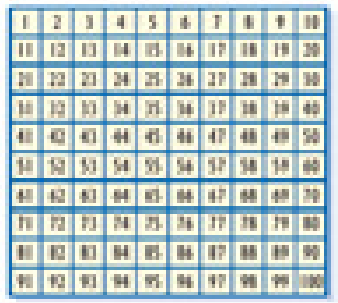
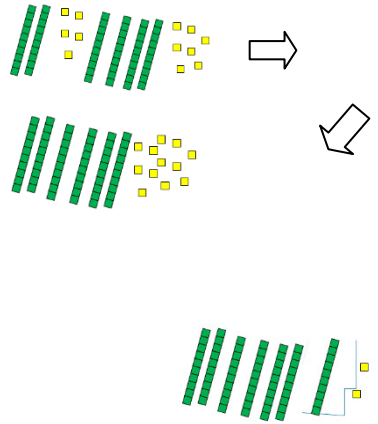
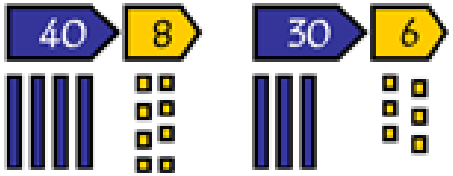
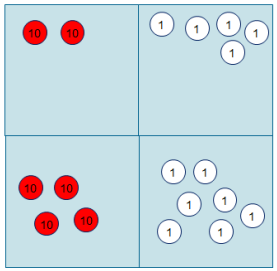
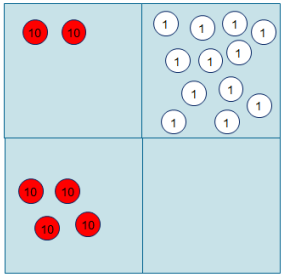
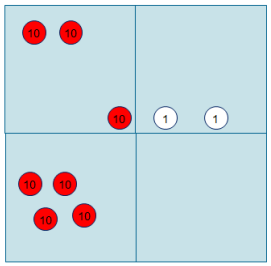
ADDITION

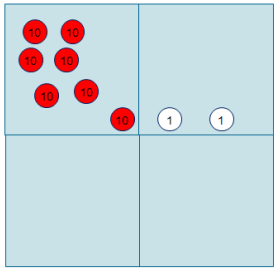
Guidance	**Examples**	
Stage 1: Recording and developing mental pictures • Children are encouraged to develop a mental picture of the number system in their heads to use for calculation. They experience practical calculation opportunities using a wide variety of equipment, e.g. small world play, role play, counters, cubes etc. They develop ways of recording calculations using pictures, etc.	**Stage 1**   **One and two more**  **makes one, two three."** There are 3 people on the bus. Another person gets on. How many now? 	Initially recording of calculating should be done by adults to model what children have done in pictures, symbols, numbers and words. Over time there should be an expectation that children will also become involved in the recording process. <u>Objects should be kept the same e.g.2 teddies and 1 more teddy. The same calculation should be repeated with different resources.</u>
Stage 2: Progression in the use of a number line • To help children develop a sound understanding of numbers and to be able to use them confidently	**Stage 2** Children should experience a range of representations of number lines, such as the progression listed below.	**Additional 'number lines' - The bead string and hundred square** A hundred square is an efficient visual

in calculation, there needs to progression in their use of number tracks and number lines **The labelled number line** • Children begin to use numbered lines to support their calculations counting on in ones. • They select the biggest number first i.e. 8 and count on the smaller number in ones.	Number track 1 2 3 4 5 6 7 8 9 10 Number line, all numbers labelled 0 1 2 3 4 5 6 7 8 9 10 • Number line, 5s and 10s labelled • Number line, 10s labelled • Number lines, marked but unlabelled 8 + 5 = 13  	resource to support adding on in ones and tens and is an extension to the number track that children have experienced previously. 8 + 2 = 10  Different orientations of the 100 square help children transfer their skills and understanding between similar representations.
Stage 3: The empty number line as a representation of a mental strategy **NB It is important to note that the empty number**	Steps in addition can be recorded on a number line. The steps often bridge through a multiple of 10.	

line is intended to be a representation of a mental method, not a written algorithm (method). This should be used as an early model to show counting on and partitioning a number to bridge 10. • The mental methods that lead to column addition generally involve partitioning. • <u>Children need to be able to partition numbers in ways other than into tens and ones.</u>	8 + 7 = 15 Seven is partitioned into 2 and 5; 2 creating a number bond to 10 with the 8 and then the 5 is added to the 10.  	
Stage 4: Partitioning into tens and ones to lead to a formal written method • The next stage is to record mental methods using partitioning into tens and ones separately.  Partitioning into tens and ones. • Add the tens and then the ones to form partial sums and then add these partial sums.	Children should use a range of practical apparatus (place value cards, straws, Dienes apparatus, place value counters) to complete TU + TU. They partition the number into tens and ones before adding the numbers together, finding the total. Once using abstract representations teachers will start with straws, bundled into 10s and singularly. Children see 10 straws making one bundle and can be involved in bundling and unbundling.	25 + 47 

• Partitioning both numbers into tens and ones mirrors the column method where ones are placed under ones and tens under tens. This also links to mental methods. • This method can be extended for TU + HTU and HTU + HTU and beyond; as well as cater for the addition of decimal numbers.	This then progresses to the use of Dienes where 10s are clearly ten ones but cannot be separated in the same way. Once children are able to use these with understanding, they will progress to the use of place value cards and place value counters which are a further abstraction of the concept of number. Money should also be used (1ps, 10ps and £1) as place value equipment to help children develop their understanding of a range of representations. 48 + 36  40 + 30 = 70 8 + 6 = 14 70 + 14 = 84 When crossing the tens barrier with ones children should use the term 'exchange'	Children may make these jottings to support their calculation. 47 + 76 40 + 70 = 110 (tens first) 7 + 6 = 13 110 + 13 = 123 Then ones first 7 + 6 =13 40 + 70 = 110 110+ 13 = 123
Stage 5 – Using Dienes/place value counters alongside columnar written method • To ensure the statutory final written method is grounded in understanding, this stage connects the practical equipment to the		

formal written method using a similar and transferrable layout. • Children first experience the practical version of column addition and when confident in explaining this, including exchanging when crossing the tens barrier with ones, they record the written method alongside. • Children will experience this stage with a variety of practical equipment to make sure their understanding is embedded and transferrable between representations.	 25 +47 ___ ___ Combine the ones first, then record each step in the calculation as you are doing it not practical then written.  25 +47 ___ ___  25 +47 2 1	Represented in place value columns and rows. Starting adding with the 'least significant digit' When the tens barriers is crossed in the 'ones' exchange then takes place. Because of the exchange we can know see that this ten belongs in the tens column and is carried there to be included in the total of that column. The tens are then added together 20 + 40 + 10 = 70, recorded as 7 in the tens

	 25 +47 72 1	It may help to record the ten underneath the tens column to be a close representation to the written calculation
Stage 5: Compact column method • In this method, recording is reduced further. Carried digits are recorded, using the words 'carry ten' or 'carry one hundred' etc., according to the value of the digit. • Later the method is extended when adding more complex combinations such as three two-digit numbers, two three-digit numbers, and problems involving several numbers of different sizes.	**Stage 5** 258 + 87 = 345 (1 1) 366 + 458 = 824 (1 1) Th H T U 3674 + 2507 6181 1 1	