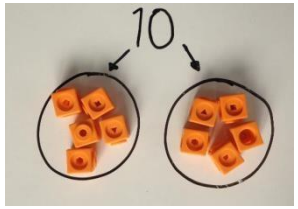
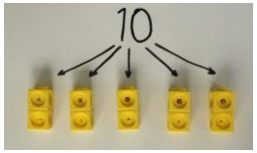
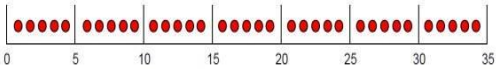
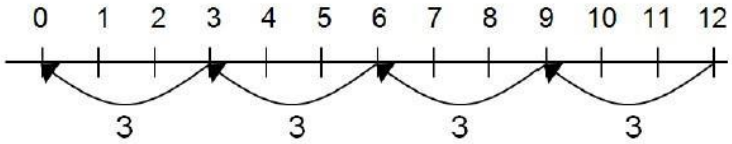
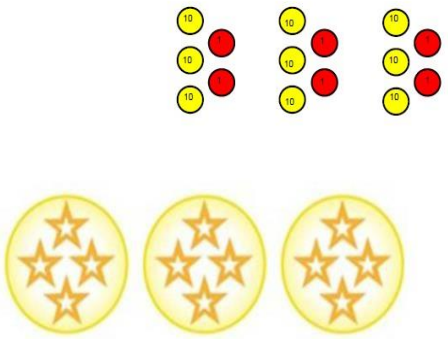
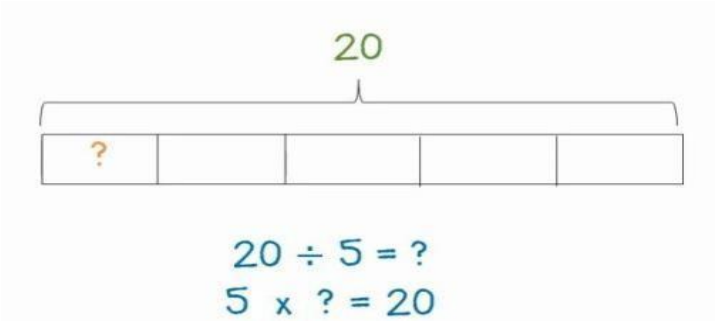
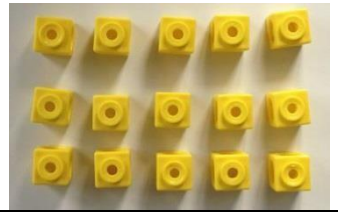
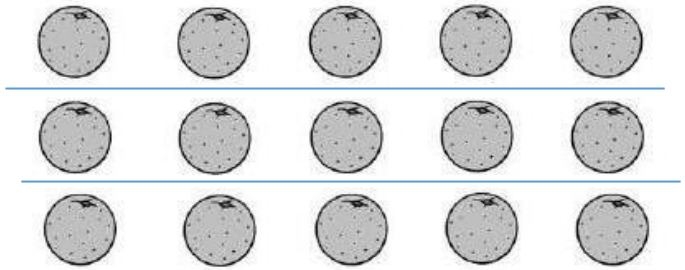
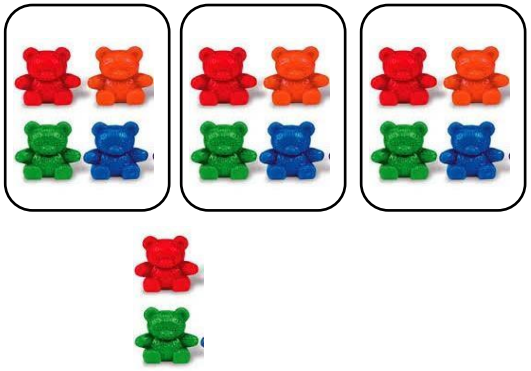
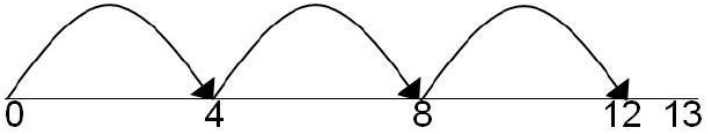
Tollesbury School – Progression in calculations

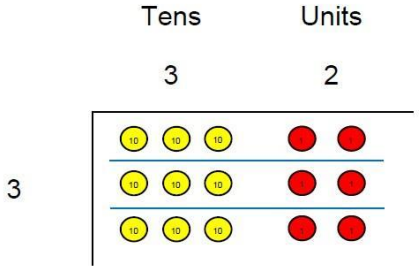
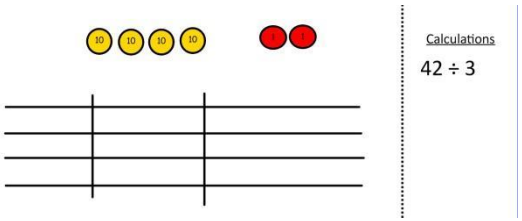
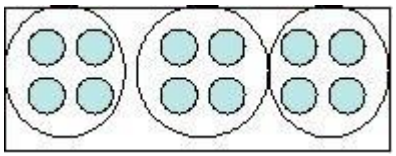
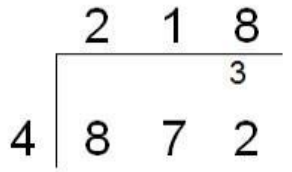
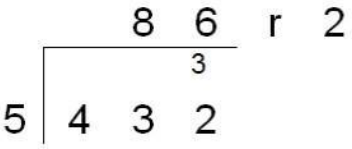
Division

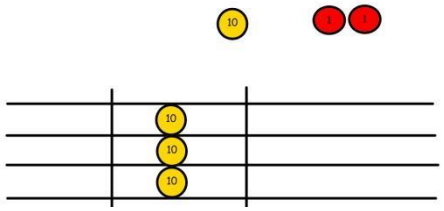
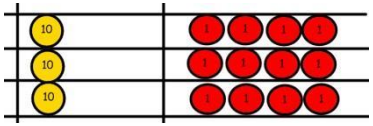
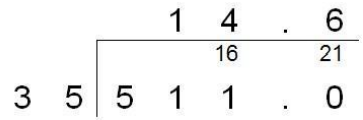
Objective and strategies	Concrete	Pictorial	Abstract
Year 1 **Sharing objects into groups**	  I have 10 cubes, can you share them equally in 2 groups?	 $8 \div 2 = 4$ Children use pictures or shapes to share quantities.	Share 9 buns between three people. $9 \div 3 = 3$

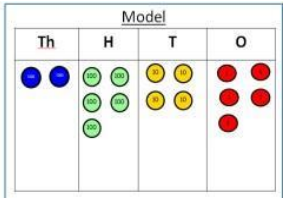
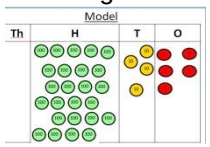
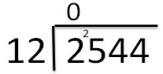
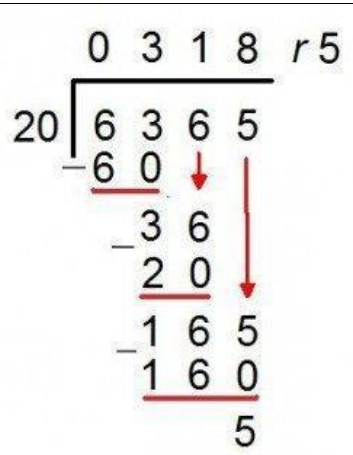
Year 1 and 2 **Division as grouping**	Divide quantities into equal groups. Use cubes, counters, objects or place value counters to aid understanding.  	Use a number line to show jumps in groups. The number of jumps equals the number of groups.  Think of the bar as a whole. Split it into the number of groups you are dividing by and work out how many would be within each group.	$28 \div 7 = 4$ Divide 28 into 7 groups. How many are in each group?

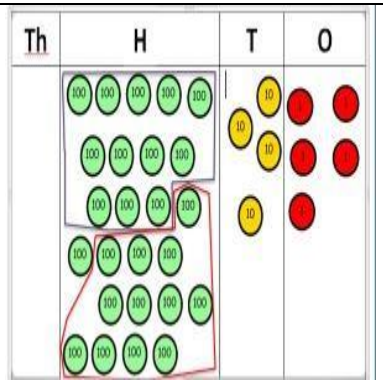
	96 ÷ 3 = 32 		
Year 2 and 3 **Division within arrays**	Link division to multiplication by creating an array and thinking about the number sentences that can be created. Eg 15 ÷ 3 = 5 5 x 3 = 15 15 ÷ 5 = 3 3 x 5 = 15 	 Draw an array and use lines to split the array into groups to make multiplication and division sentences.	Find the inverse of multiplication and division sentences by creating four linking number sentences. 7 x 4 = 28 4 x 7 = 28 28 ÷ 7 = 4 28 ÷ 4 = 7
Year 3	14 ÷ 3 = Divide objects between groups and see how much is left over.	Jump forward in equal jumps on a number line then see how many more you need to jump to find a remainder.	Complete written divisions and show the remainder using r.

Division with a remainder		 Draw dots and group them to divide an amount and clearly show a remainder. 	

Short Division **Year 3** (2 digits by 1 digit- concrete and pictorial) **Year 4** (up to 3 digits by 1 digit- concrete and pictorial) **Year 5** (up to 4 digits by a 1 digit number interpret remainders appropriately for the context)	 Use place value counters to divide using the bus stop method alongside  42 ÷ 3= Start with the biggest place value, we are sharing 40 into three groups. We can put 1 ten in each group and we have 1 ten left over.	Students can continue to use drawn diagrams with dots or circles to help them divide numbers into equal groups.  Encourage them to move towards counting in multiples to divide more efficiently.	Start bus stop method as soon as chn are able to in Year 3. Begin with divisions that divide equally with no remainder.  Move onto divisions with a remainder. 

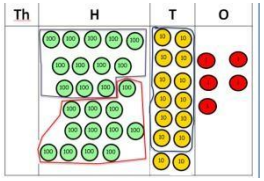
Year 6	 We exchange this ten for ten ones and then share the ones equally among the groups.  We look how much in 1 group so the answer is 14.		Finally move into decimal places to divide the total accurately. 

Year 6 **Long division** (up to 4 digits by a 2 digit number- interpret remainders as whole numbers, fractions or round)	 2544 ÷ 12 How many groups of 12 thousands do we have? None Exchange 2 thousand for 20 hundreds.   How many groups of 12 are in 25 hundreds? 2 groups. Circle them. We have grouped 24 hundreds so can take them off and we are left with one.	Instead of using physical counters, students can draw the counters and circle the groups on a whiteboard or in their books. Use this method to explain what is happening and as soon as they have understood what move on to the abstract method as this can be a time consuming process.	

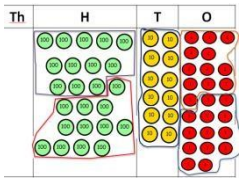


$$\begin{array}{r} 02 \\ 12\overline{)2544} \\ 24 \\ \hline 1 \end{array}$$

Exchange the one hundred for ten tens so now we have 14 tens. How many groups of
12 are in 14? 1 remainder 2



$$\begin{array}{r} 021 \\ 12\overline{)2544} \\ 24 \\ \hline 14 \\ 12 \\ \hline 2 \end{array}$$



$$\begin{array}{r} 0212 \\ 12\overline{)2544} \\ 24 \\ \hline 14 \\ 12 \\ \hline 24 \\ 24 \\ \hline 0 \end{array}$$

Exchange the two tens for twenty ones so now we have 24 ones. How many groups of 12 are in 24? 2