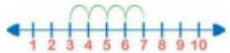
Calculation Policy

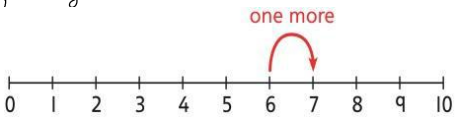
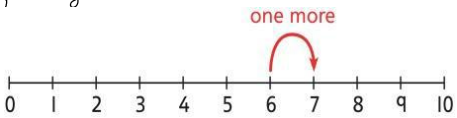
KIBBLESWORTH ACADEMY

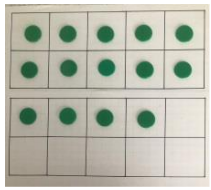
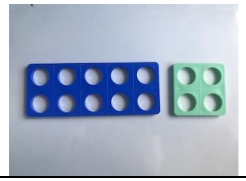
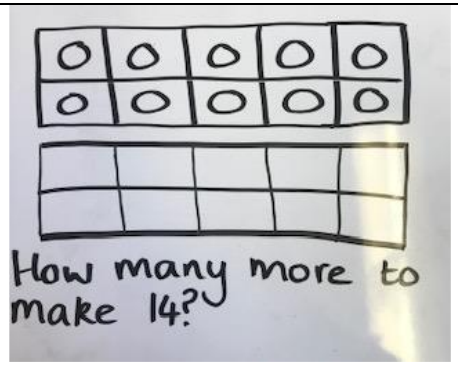
June 2022

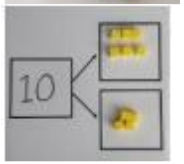
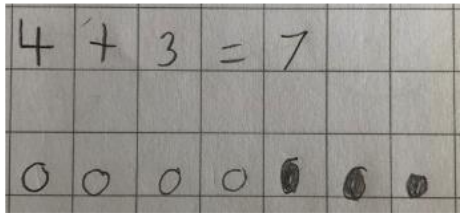
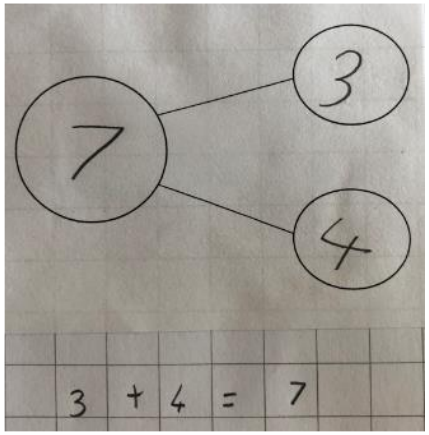
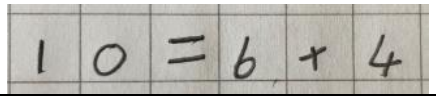
Approved by:	Education Committee	**Date:**	6/12/2022
Subject co-ordinator:	Andrew Ridley		
Link Governor			
Last reviewed on:			
Next review due by:			

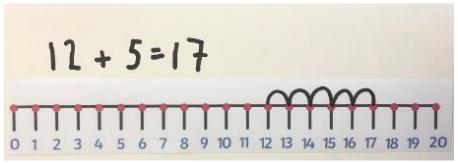
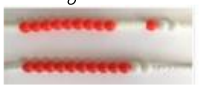
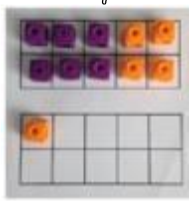
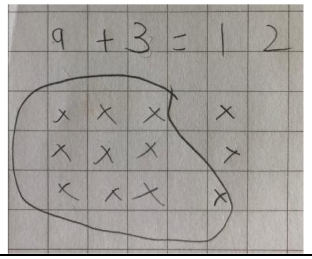
Addition

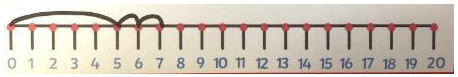
EYFS Addition			
Children are encouraged to gain a sense of the number system through the use of counting concrete objects.   	They combine objects in practical ways and count all objects.  	They understand addition as counting on. They will count on in ones and twos using objects, cubes, bead string, Reknerek and number line.  	They begin to use + and = They are encouraged to develop a mental picture of the number system in their heads to use for calculations. Some children may be able to represent their calculations using symbols and numbers within a written calculation. 2 + 3 = 5

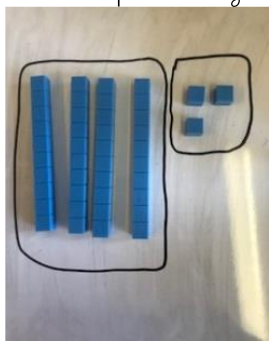
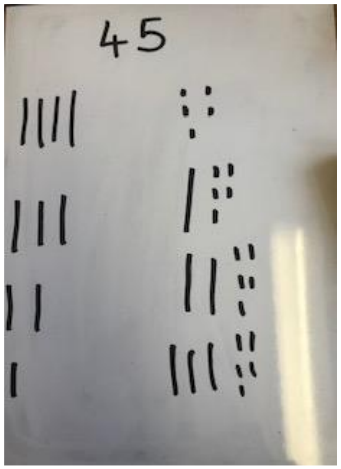
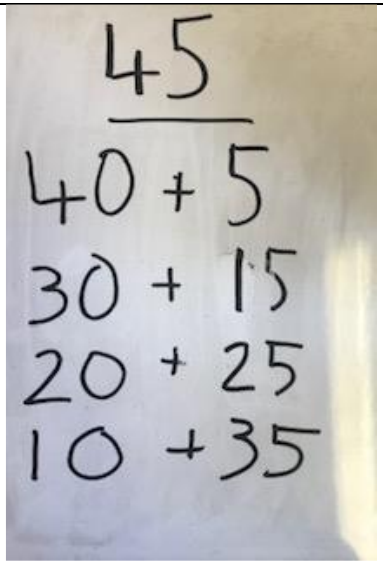
Year 1 Addition			
Objective and strategy	Concrete	Pictorial	Abstract
Counting and adding one more.	Children add another object to a group to find one more.  Add one more to a set of multilink cubes.  Add one more to a ten frame.	Children can use a number line to understand how to link counting on with finding one more.  Draw a picture to represent one more.	Children can use a number line to understand how to link counting on with finding one more.  Verbally "One more than 4 is 5" 5 + 1 = 6

Understand teen numbers as one ten and "some more"	Recognise a group of 10 objects and count more  "There are 10 black cubes and 4 grey cubes. 10 and 4 more is 14" Use a ten frame to support understanding of a complete 10 for teen numbers  "14 is 10 and 4 more" 	 "14 is 10 and 4 more"	"1 ten and 4 ones equals 14" "10 + 4 = 14

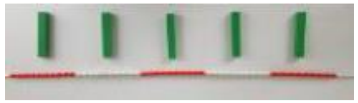
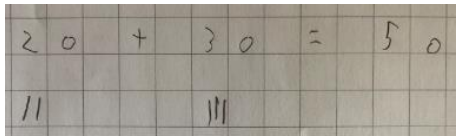
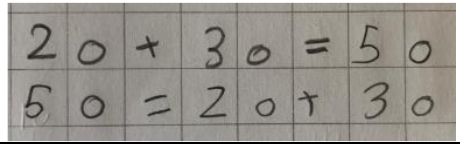
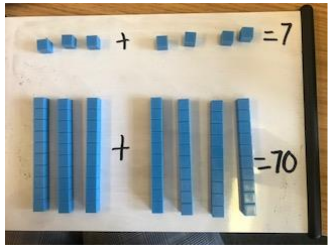
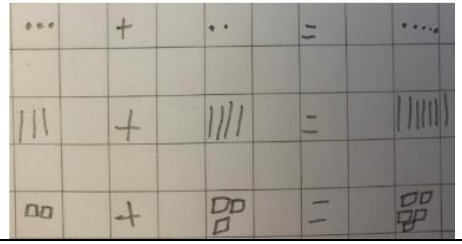
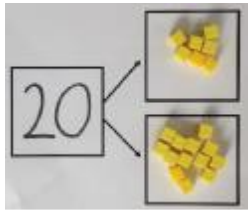
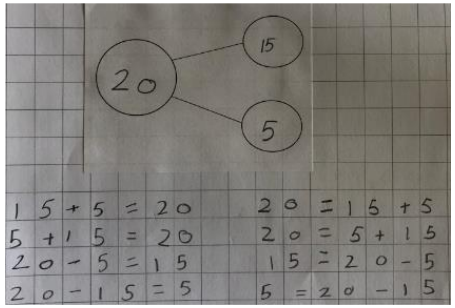
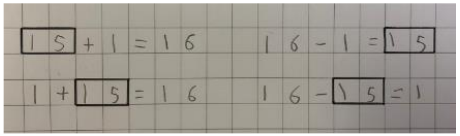
Combining two parts to make a whole: part-whole model	Use part whole model.    Use cubes to add two numbers together as a group or in a bar. 	Use pictures to add two numbers together as a group or in a bar.  	Use the part-part whole diagram to move into the abstract.  

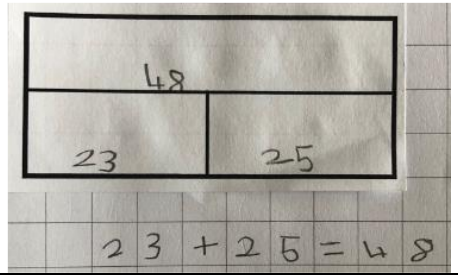
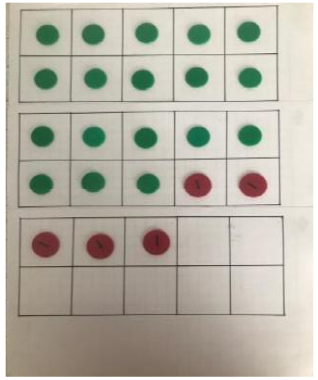
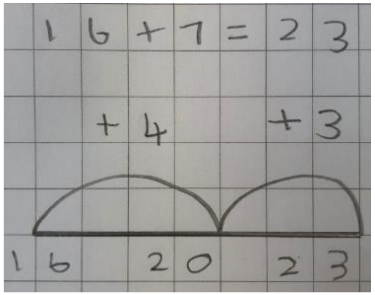
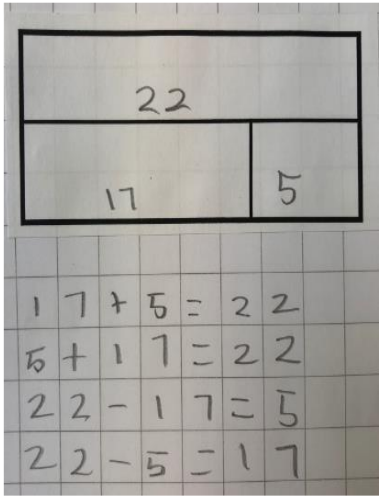
Starting at the bigger number and counting on	Children use knowledge of counting to 20to find a total by counting on using people of objects Start with the larger number on the bead string and then count on the smaller number one by one to find the answer. 	Start with the larger number on the number line and count on in ones or in one jump to find the answer. 	Place the larger number in your head and count on the smaller number to find the answer
Regrouping to make 10 / Bridging the 10 using number bonds *(This is an essential skill for column addition further up the school).*	Start with the bigger number, partition the smaller number to make 10 and adding on the rest.  Use tens frames 	Use pictures or a number line. Regroup or partition the smaller number using the part part whole model to make 10. 	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?

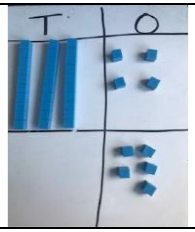
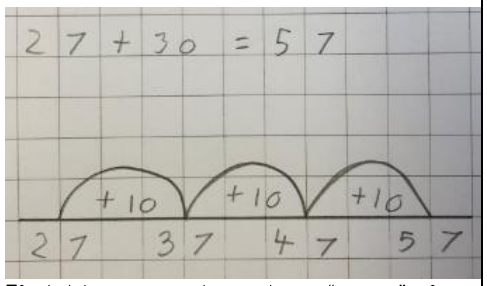
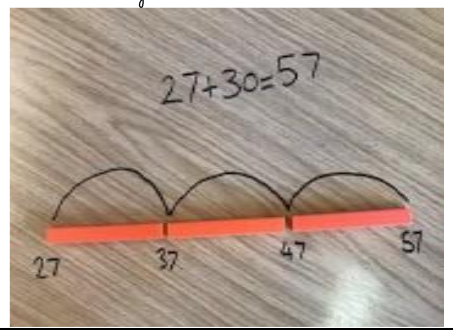
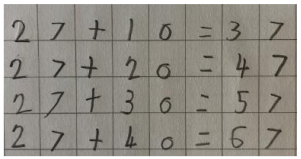
Represent and use number bonds and related subtraction facts within 20	2 more than 5 		Emphasis should be on the <u>language</u>: "1 more than 5 is equal to 6." "2 more than 5 is 7." "8 is 3 more than 5."

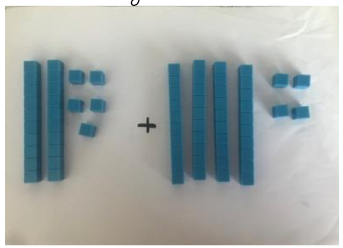
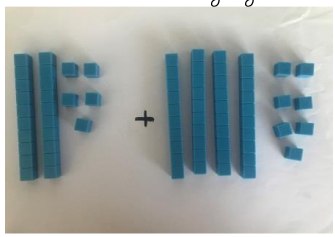
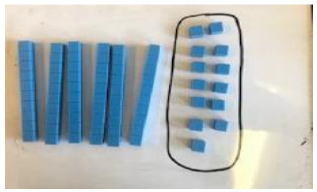
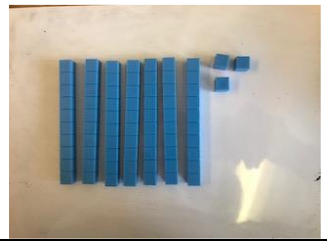
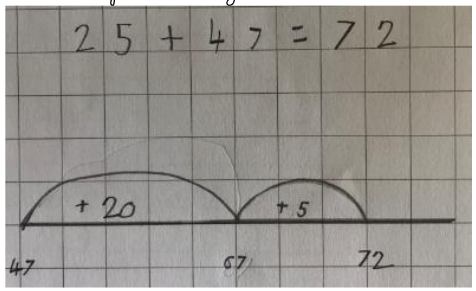
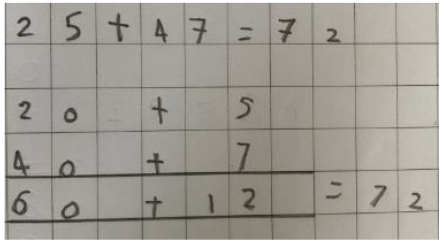
Year 2 Addition			
Objective and strategy	Concrete	Pictorial	Abstract
Partitioning numbers into 10s and 1s	Bundle straws to understand unitising of 10s  Group objects into 10s and 1s Standard partitioning  43 = 40 + 3 None standard partitioning	Children may use pictorial representation of dienes to support understanding 	

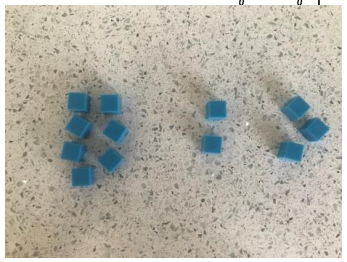
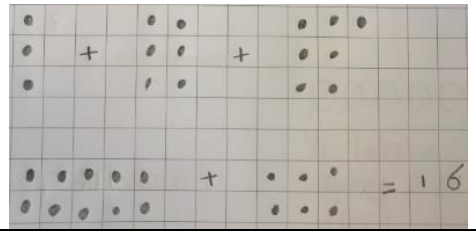
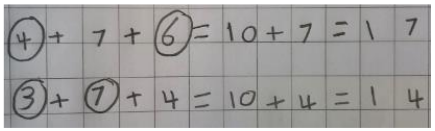
	 43 = 30 + 13		

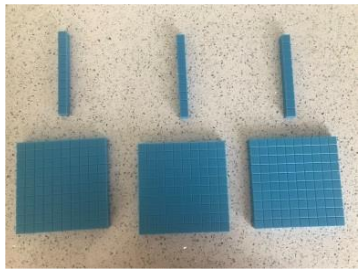
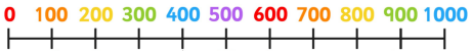
Adding multiples of ten	50 = 30 + 20 		
Using known bonds and unitising to add 10s		Children draw own representations of Hundreds, Tens and Ones 	"3 ones add 4 ones equals 7 ones therefore 3 tens add 4 tens equals 7 tens" 3 + 4 = 7 Therefore 30 + 40 = 70
Use known number facts Part-part whole model	Children explore ways of making numbers to and within 20. 	 Also with equals sign at the beginning.	

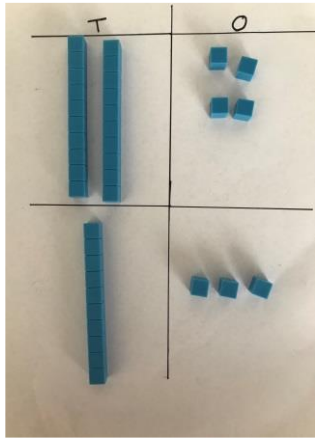
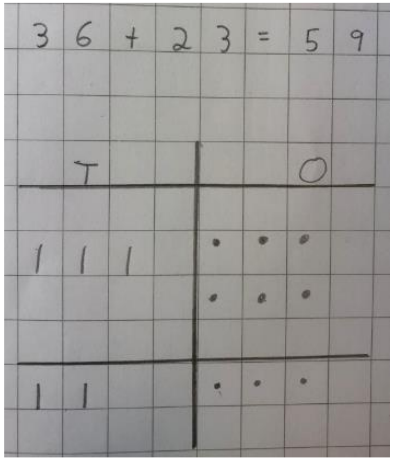
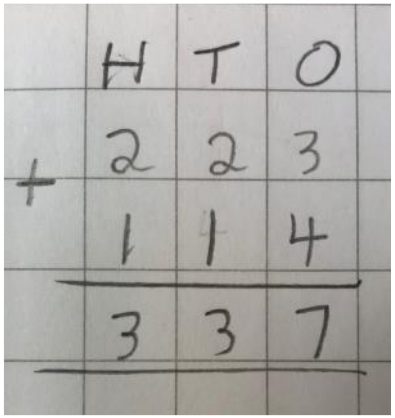
Bar modelling can be used to support	 10 = 7 +3 100 = 70 + 30		
Adding a two digit number and ones	Use tens frame to make 10 and then explore the pattern. 	Use number line to model  The National Curriculum states: *£Recording addition and subtraction in columns supports place value and prepares for formal written methods with larger numbers."* There is <u>NOT</u> an expectation that children in KS1 will complete formal written methods for addition. However, place value columns can be used alongside pictorial representations to demonstrate place value.	Children use knowledge of composition of number 

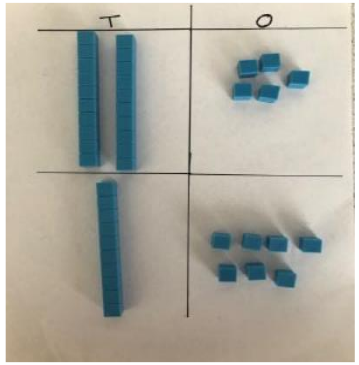
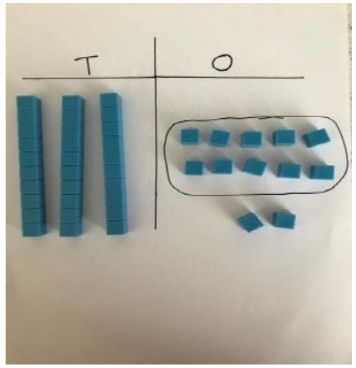
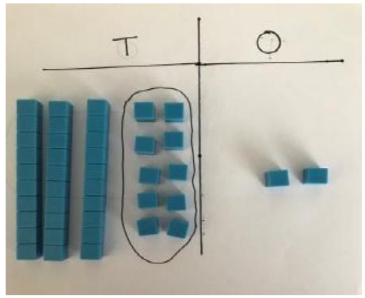
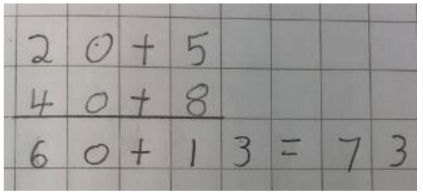
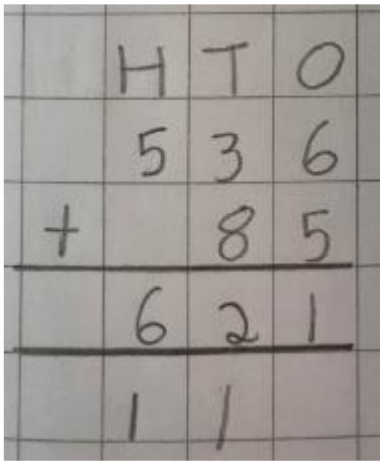
			
Adding a multiple of 10 to a 2-digit number	Explore that the ones digit won't change.	 If children struggle to draw "jumps" of similar size, Cuisenaire rods could be used to reinforce. 	

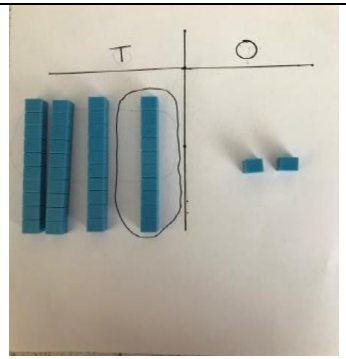
Add two 2-digit numbers	Model using dienes with no exchanging.  Then with exchanging.   	Use number line and bridging ten methods if necessary. 	

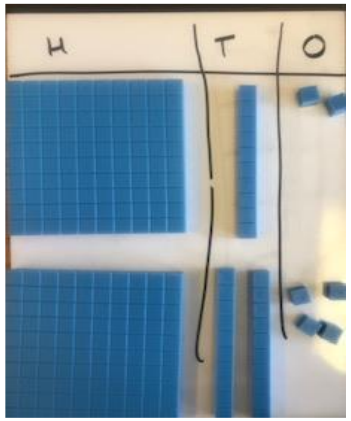
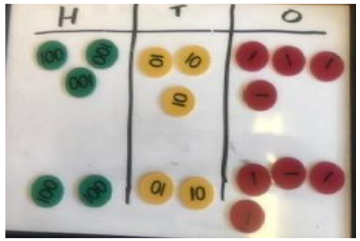
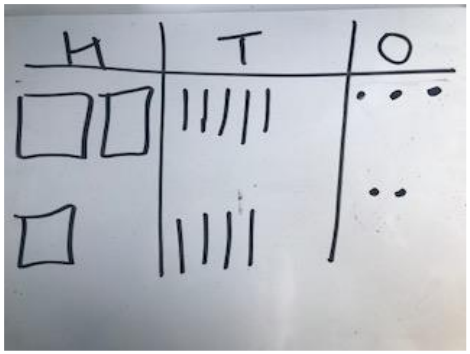
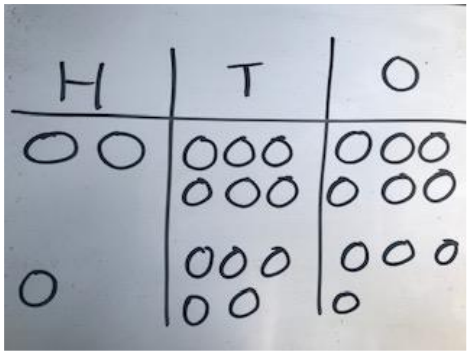
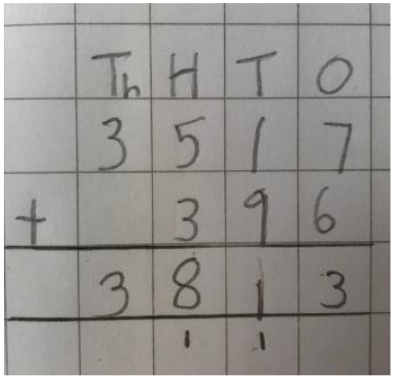
Add three 1 digit numbers	Combine to make 10 first if possible.	Regroup and draw representations.	Combine the two numbers that make/bridge the ten then add on the remaining number.
			

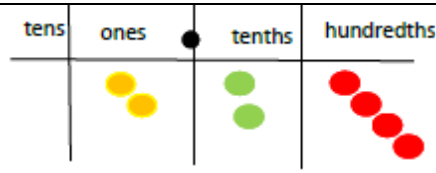
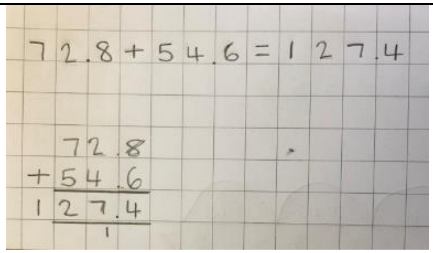
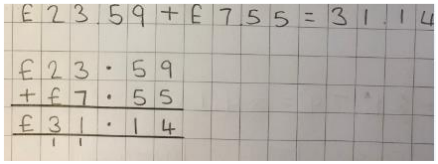
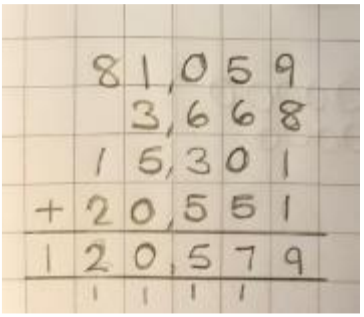
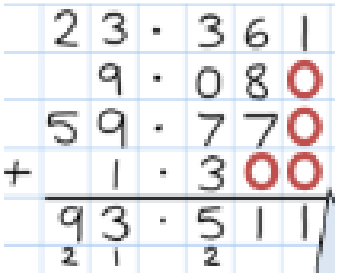
Year 3 Addition			
Objective and strategy	Concrete	Pictorial	Abstract
Understanding place value to 1,000	Understand the cardinality of 100 and the link with ten tens  Unitise 100 and count in steps of 100	Represent steps of 100 on a number line and count up to 1,000 and back 	

Column addition – no regrouping	Model using dienes.	Representing dienes pictorially	Add the ones first, then the tens and then the hundreds.
			

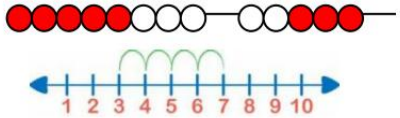
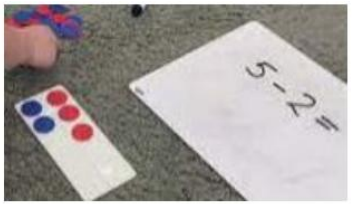
Column addition with regrouping	Model exchanging 10 ones    	Children could draw a representation of the grid to further support their understanding, carrying the regrouped ten underneath the line. Then modelling where an exchange occurs between the tens and the hundreds.	Start by partitioning the numbers before an informal method to show the exchange.   *Note: progression with exchanging would be an exchange in one column, then two columns etc.*

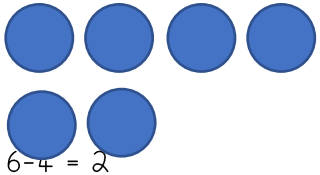
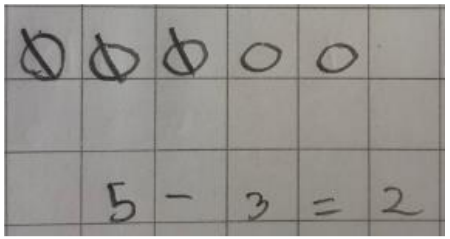
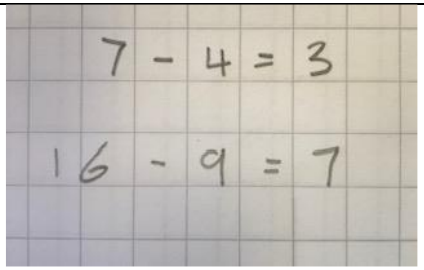
	 Then modelling where an exchange occurs between the tens and the hundreds.		

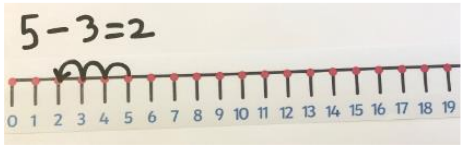
Years 4 - 6 Addition			
Objective and strategy	Concrete	Pictorial	Abstract
Year 4 Add numbers with up to 4 digits	Children continue to use dienes or move onto place value counters to add. It is important that the similarities and differences between the two resources are discussed.   	Draw representations using a place value grid of either Base 10 or place value counters.   	Continue from previous work to exchange to hundreds as well as tens. Relate to money and measures. 

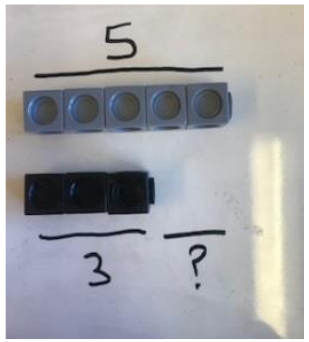
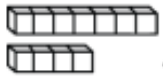
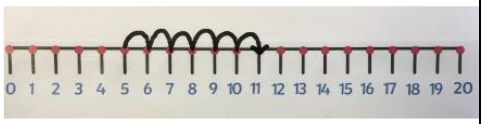
Year 5 Add numbers with more than 4 digits. Add decimals with 2 decimal places, including money	As Year 4 – introduce decimal place value counters and model exchange for addition.		 
Year 6 Add several numbers of increasing complexity. Include adding money, measures and decimals with different numbers of decimals	As Year 5	As Year 5	Insert zeros for place holders  

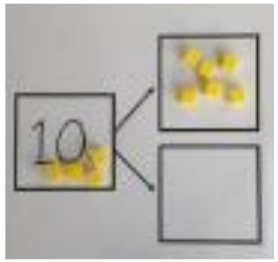
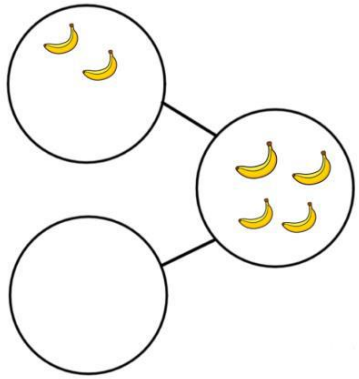
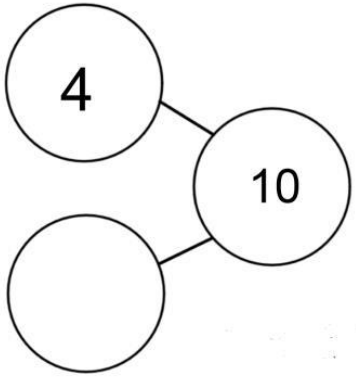
Subtraction

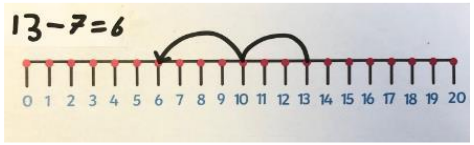
EYFS Subtraction			
Children are encouraged to gain a sense of the number system through the use of counting concrete objects. 	They combine objects in practical ways and count all objects. 	They begin to count back in ones and twos using objects, cubes, bead string and number line. 	They use concrete and pictorial representation to record their calculations. They begin to use - and = Some children may be able to represent their calculations using symbols and numbers within a written calculation. 

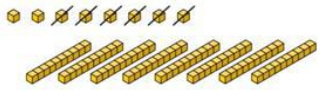
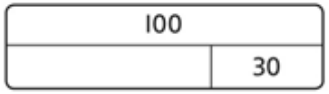
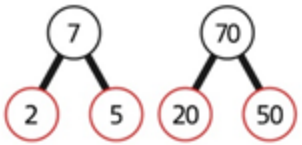
Year 1 Subtraction			
Objective and strategy	Concrete	Pictorial	Abstract
Taking away ones	Use physical objects (counters, cubes etc) to show how objects can be taken away.  6-4 = 2	Cross out objects to show what has been taken away.  	

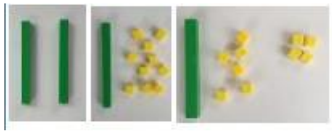
Counting back	Move objects away from the group counting backwards.  Move the beads along the bead string as you count backwards. 	Count back in ones using a number line. 	Children can use a number line to help. *Put 13 in your head. Count back 4. What number are you at?*

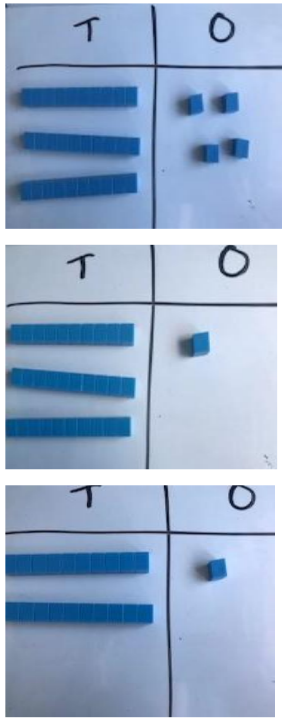
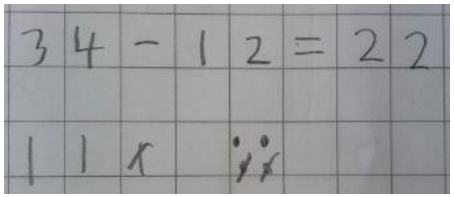
Finding the difference	Compare objects and amounts.  "5 is 2 more than 3" This can then form the basis of introducing bar modelling / part part whole. 	Children represent objects pictorially.  'Seven is 3 more than four' 'I am 2 years older than my sister' Count on using a number line to find the difference.  Children understand, "Find the difference as subtraction"	The difference between 10 and 6 is 4. 10 -4 = 6 *Sophie has 12 football cards. Her sister has 5. How many more does Sophie have than her sister?*

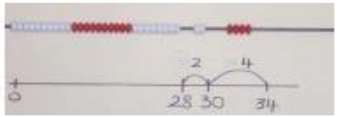
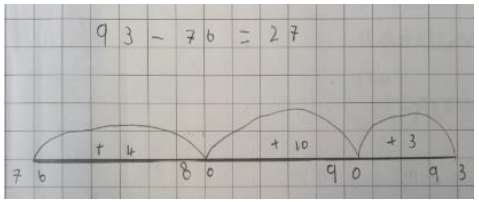
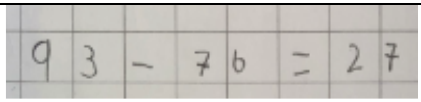
Part/whole model	Link to addition. Use the PPW model to model the inverse.  	Use pictorial representation to show the part.  Move to using numbers within the part-part whole model.  	10 - 4 = 6

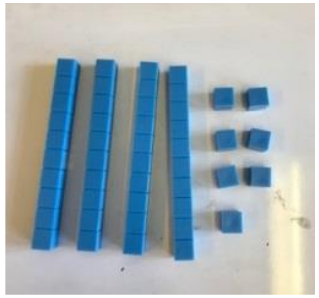
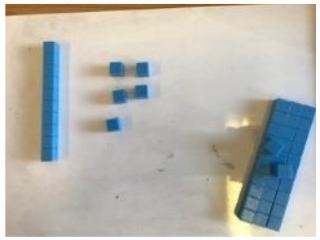
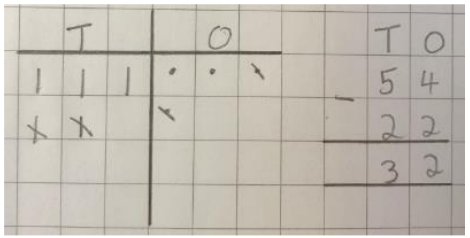
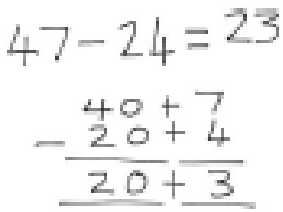
Make 10	14-9	13-7	16 - 8
	 Make 14 on the tens frame. Take 4 away to make 10, then take 5 away to make 9.	 Jump back 3 to 10, then jump back another 4.	*How many do we need to take away to make 10? How many do we need to take away after?*

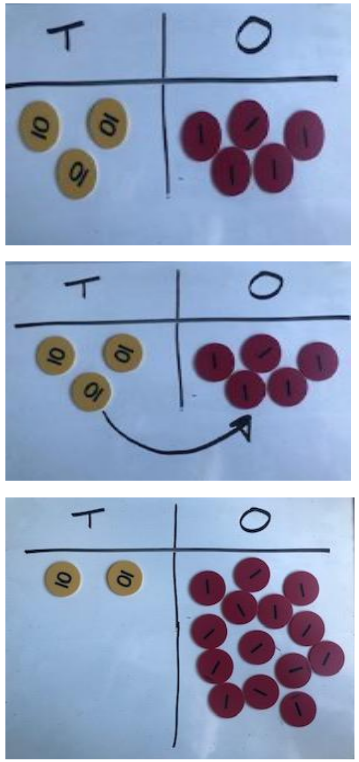
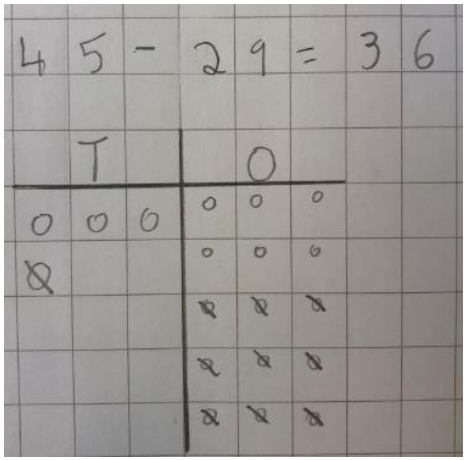
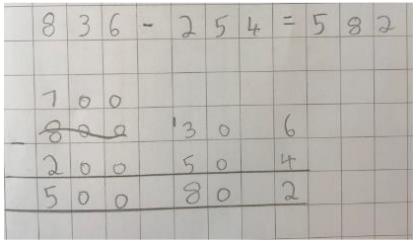
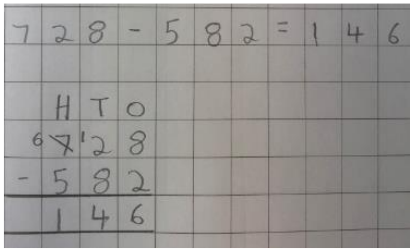
Year 2 Subtraction			
Objective and strategy	Concrete	Pictorial	Abstract
Subtracting multiples of 10 Use known number bonds and unitising to subtract multiples of 10	Move objects away from the group  *8 subtract 6 is 2.* *So, 8 tens subtract 6 tens is 2 tens.*	 *10 − 3 = 7* *So, 10 tens subtract 3 tens is 7 tens.*  *7 tens subtract 5 tens is 2 tens.* *70 − 50 = 20*	80 - 20 = 60

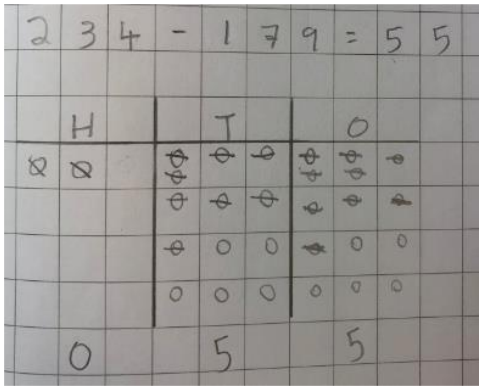
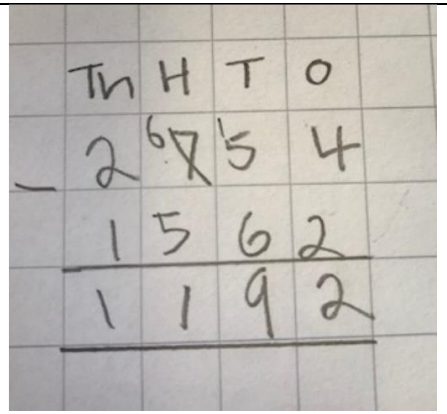
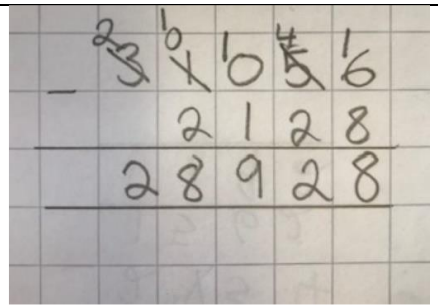
Regroup a ten into ten ones	Use a place value chart to show how to change a ten into ten ones 20 - 4 	20-4	20 - 4 = 16	

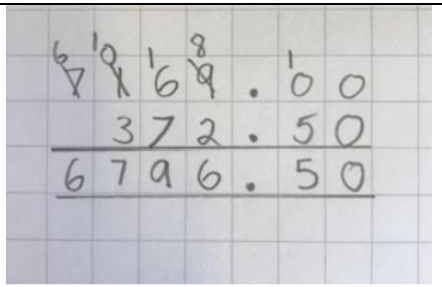
Partitioning to subtract without regrouping	Use dienes to show how to partition the number when subtracting without regrouping. 34-13 = 21 	Children draw representations of dienes and cross off. 43 - 21 = 22 	43 - 21 = 22

Counting on *(Progression should be crossing one ten, crossing, crossing more than one ten, crossing the hundreds)*	34 - 28  Use the bead string to model counting on to the next 10 from the smallest number and then the rest.	Use the number line to model counting on to the next 10 from the smallest number and then the rest.  	

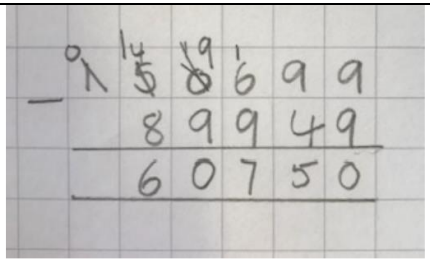
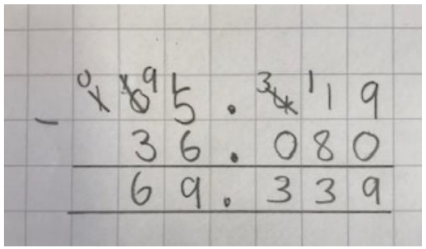
Year 3 Subtraction			
Objective and strategy	Concrete	Pictorial	Abstract
Column subtraction without regrouping	Use Base 10 to model. 47 - 32 Begin by showing 47 using Base 10  Then remove the 32 	Draw representations to support understanding. 	

Column subtraction with regrouping	Begin with Base 10 then move to place value counters modelling the exchange of a ten into ten ones. 35 - 19 	Children may draw Base 10 or place counters and cross them off. 	Begin by partitioning into place value columns.  Then move to formal method. 

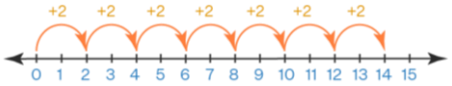
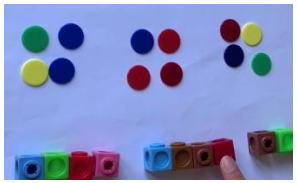
Years 4 - 6 Subtraction			
Objective and strategy	Concrete	Pictorial	Abstract
Year 4 Subtracting tens and ones. Subtract with up to 4 digits Introduce decimal subtraction through context of money	234 - 179 Model process of exchange using Base 10 or Place Value counters and then move to place value counters.	Children to draw the place value counters and show the exchange. 	
Year 5 Subtract with at least 4 digits, including measures and money. Subtract with decimal values, including mixtures of integers and decimals. Include where the decimal needs to be aligned.	As Year 4	As Year 4	 Recognise the use of zero as a place holder. £7,169 - £37,2.50

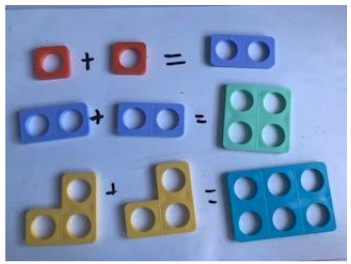
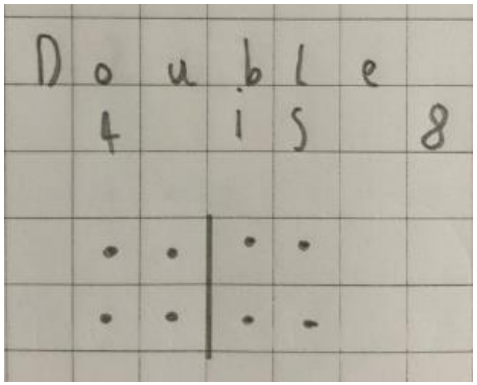
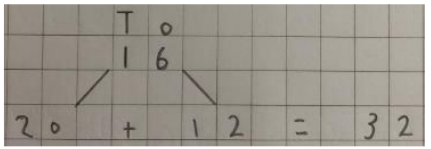
			

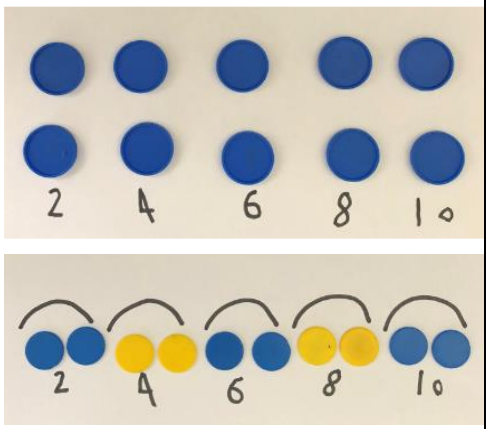
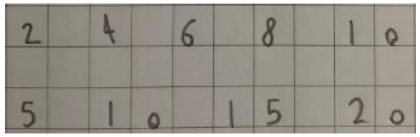
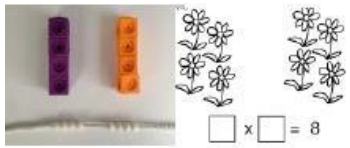
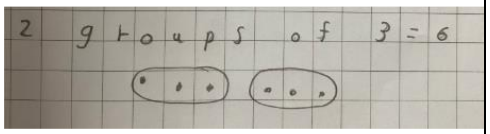
6796.00
372.50
6796.50

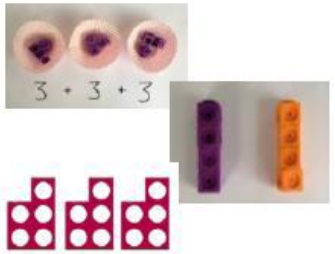
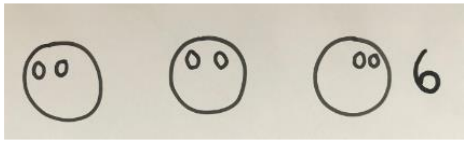
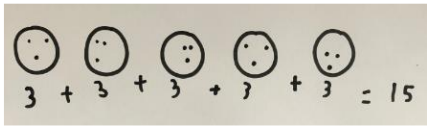
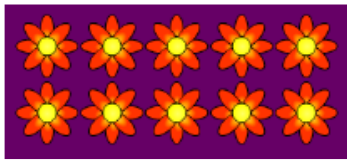
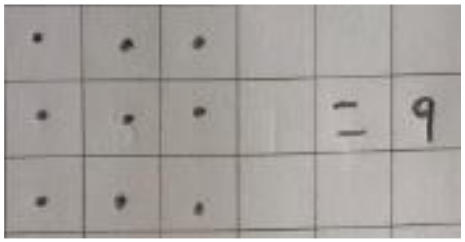
Year 6 Subtract with increasingly large and more complex numbers and decimal values			 

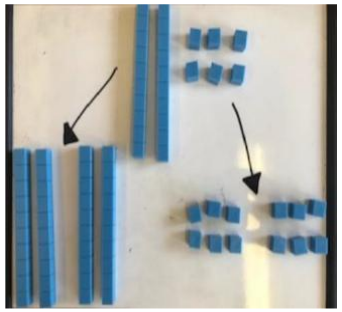
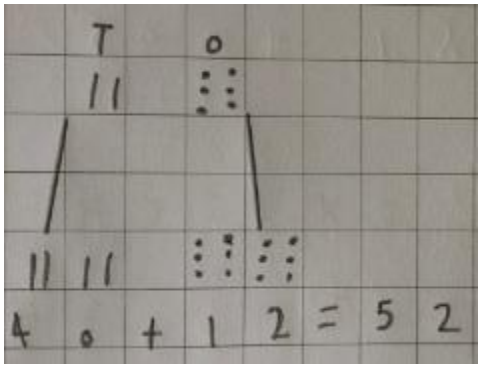
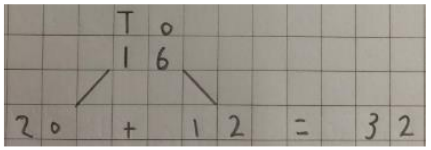
Multiplication

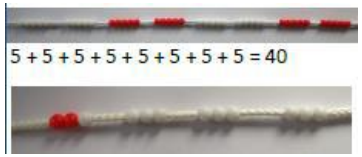
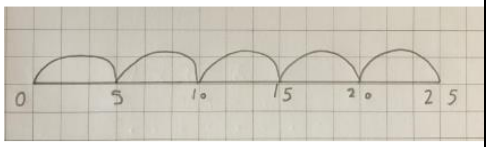
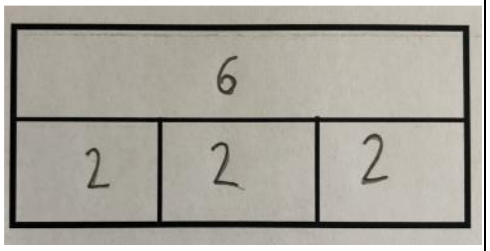
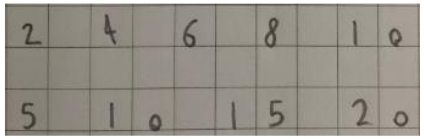
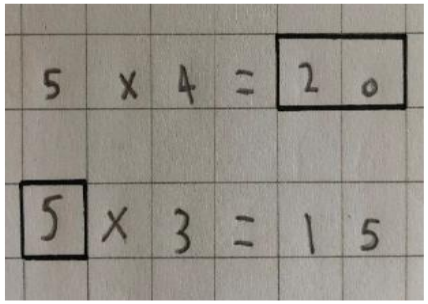
EYFS Multiplication			
Children use concrete objects to make and count equal groups of objects. 	They will count on in twos using a bead string and number line. 	They understand doubling as repeated addition. 2 + 2 = 4	They use concrete and pictorial representation to record their calculations. 

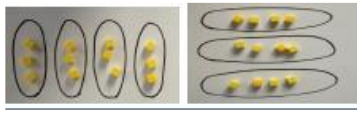
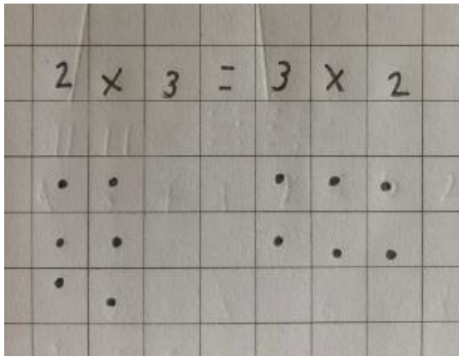
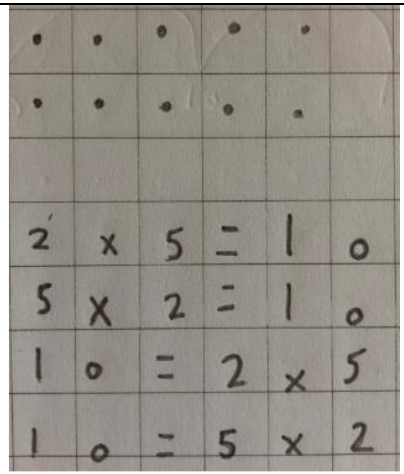
Year 1 Multiplication			
Objective and strategy	Concrete	Pictorial	Abstract
Doubling	Use practical activities using manipulatives including cubes and Numicon to demonstrate doubling.  Double 4 is 8 	Draw pictures to show how to double numbers. 	Partition a number and then double each part before recombining it back together. 

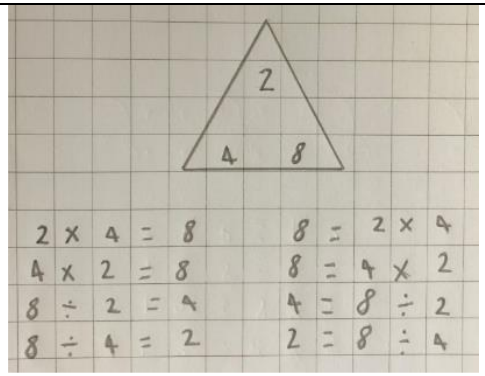
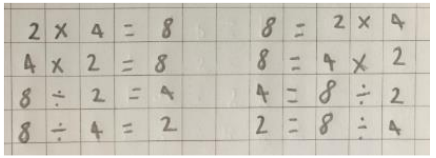
Counting in multiples	Count the groups as children are skip counting. Children may use their fingers as they are skip counting. 	Children make representations to show counting in multiples.  	Count in multiples of a number aloud. Write sequences with multiples of numbers. 
Making equal groups and counting the totals	Use manipulatives to create equal groups.  	Draw and make representations.  	2 groups of 3 = 6 2 x 4 = 8

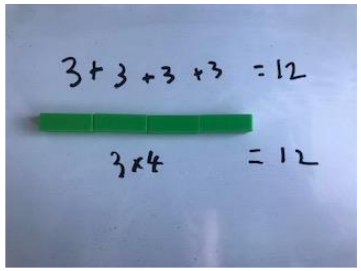
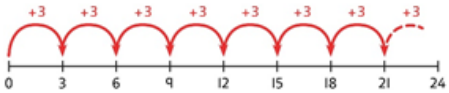
Repeated addition	Use different objects to add equal groups. 	Use pictorial representations, including number lines, to solve problems. *e.g. There are 2 sweets in each bag. How many sweets are in 3 bags?* 	Write addition sentences to describe objects and pictures. 
Understanding arrays	Use objects laid out in arrays to find answers. 	Draw representations of arrays to show understanding. 	2 × 3 = 6 2 × 5 = 10

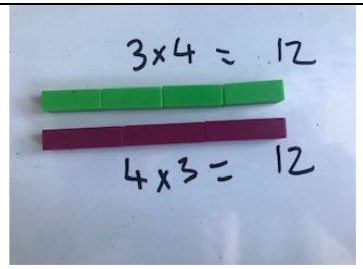
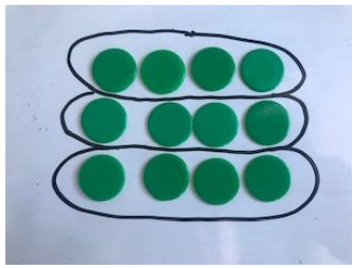
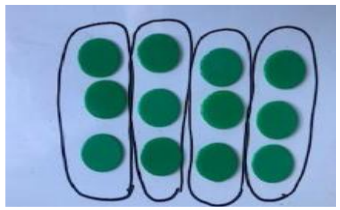
Year 2 Multiplication			
Objective and strategy	Concrete	Pictorial	Abstract
Doubling	Model doubling using dienes and place value counters.  Double 26 = 40 + 12 = 52	Draw pictures to represent how to double numbers. 	Partition a number, then double each part before recombining it. 

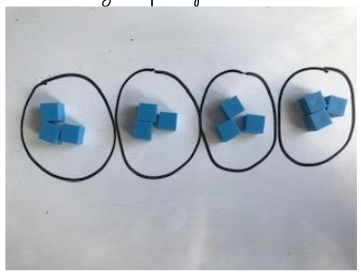
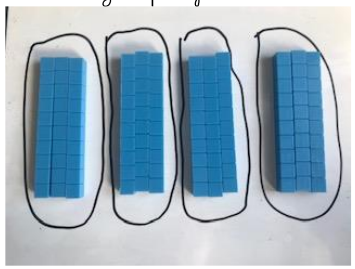
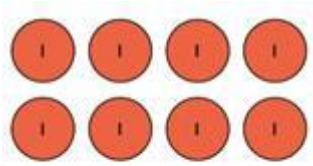
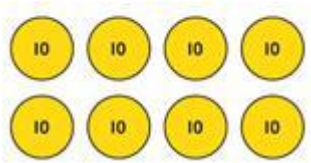
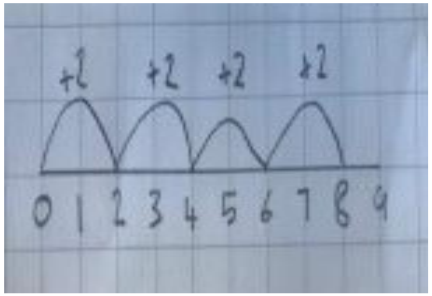
Counting in multiples of 2,5 and 10 from zero *(repeated addition)*	Count the groups as children are skip counting. Use counting sticks in class  	Number lines and bar models should be used to show representation of counting in multiples.   	Count in multiples of a number aloud. Write sequences with multiples of numbers.  

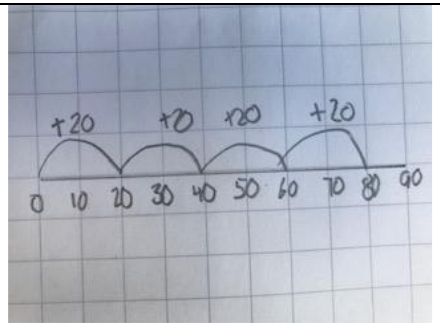
Multiplication is commutative (arrays)	Create arrays using counters, cubes or Numicon.    Pupils should understand that arrays can represent different equations and that, as multiplication is commutative, the order of the multiplication does not affect the answer. 	Use pictorial representations of arrays to show different calculations and explore commutativity. 	 Use an array to write multiplication and reinforce repeated addition.

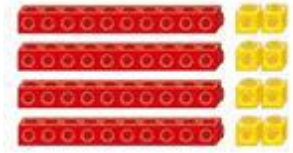
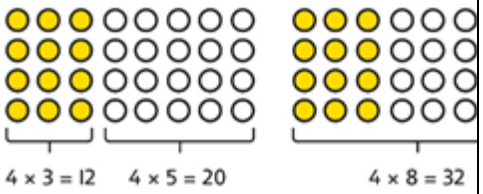
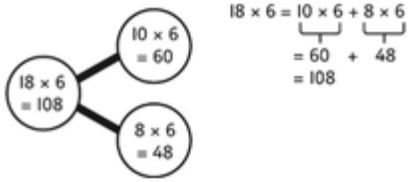
Using the inverse *This should be taught alongside division, so pupils learn how they work alongside each other.*		 Ensure number sentences with = at the start and end are taught.	Show all 8 related fact family sentences. 

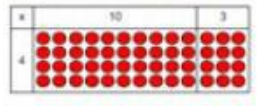
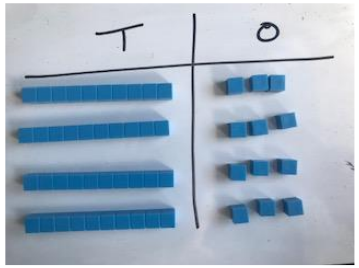
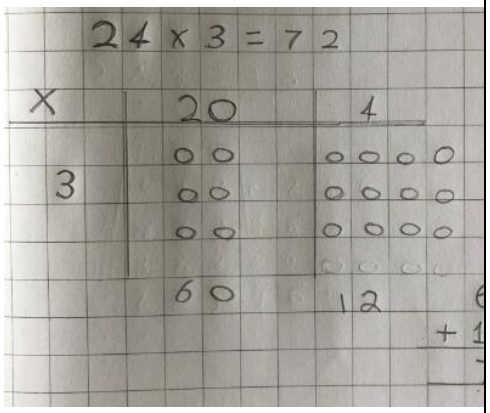
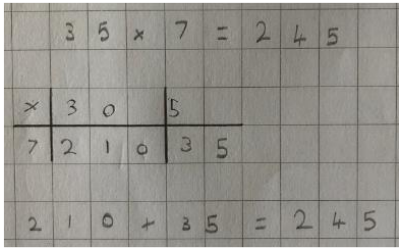
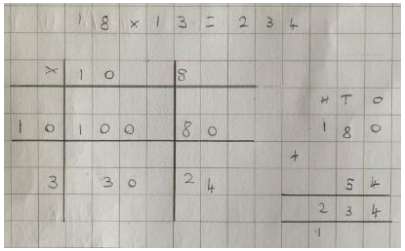
Year 3 Multiplication			
Objective and strategy	Concrete	Pictorial	Abstract
Continue to understand equal grouping and repeated addition	Children build on previous learning about equal groups and the relationship with repeated addition. Children will recognise examples and non-examples. 	Children understand the link between repeated addition and multiplication.  3 + 3 + 3 + 3 + 3 + 3 + 3 + 3 = 24 3 x 8 = 24	Once children have experienced concrete and pictorial opportunities to support their conceptual understanding, they can use recall of multiplication facts. 3 x 8 = 24

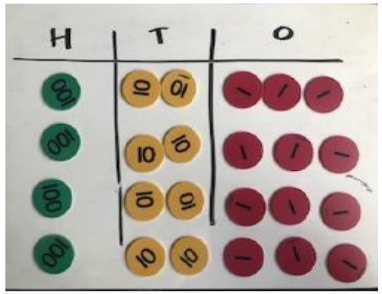
Using commutativity to support understanding of the times tables	  Children recognise that arrays demonstrate commutativity.   There are 3 groups of 4.	Children could draw arrays.	*I need to work out 5 groups of 8.* *I know that* 5 × 8 = 40 *Therefore, I know that* 8 × 5 *also* = 40. 2 × 4 = 8 20 × 4 = 80

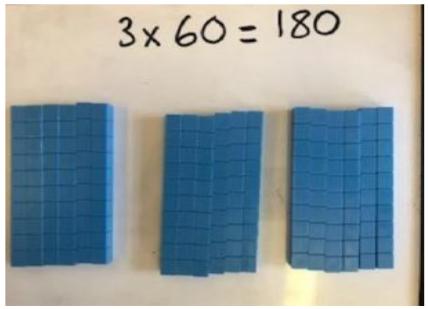
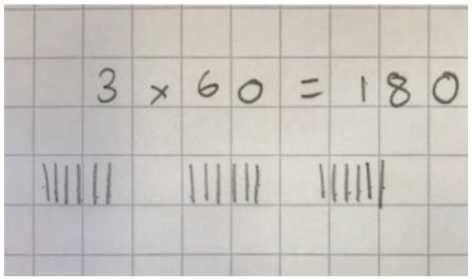
	There are 4 groups of 3. There are 12 counters altogether.		
Use known facts to multiply 10s	Use Base 10 to explore the relationship between known times-tables and multiples of 10. Make 4 groups of 3 ones  Make 4 groups of 3 10s  What's the same? What's different?	Children understand how unitising 10s supports multiplying by multiples of 10 4 groups of 2 ones is 8 ones   4 groups of 2 tens is 8 tens 2 x 4 = 8 20 x 4 is 10 times larger so the answer is 8 x 10 = 80. 	

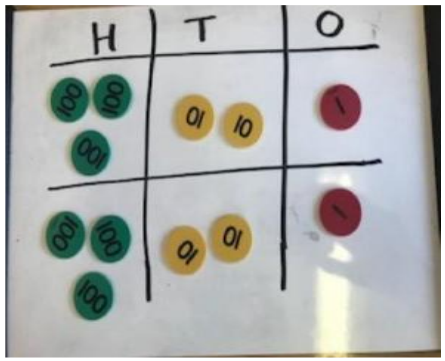
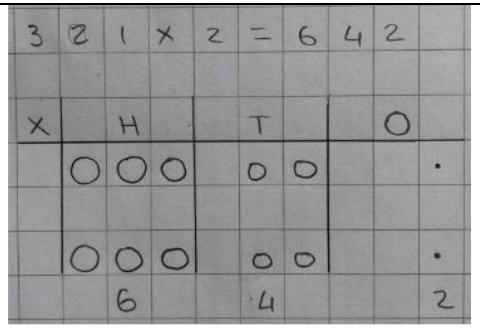
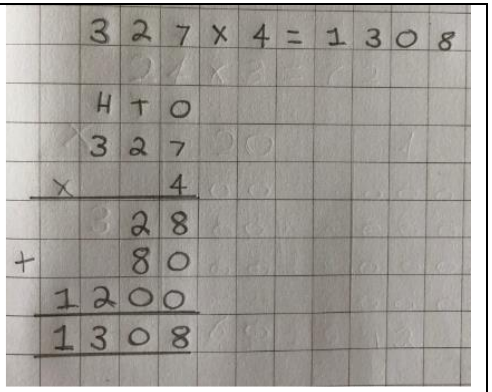
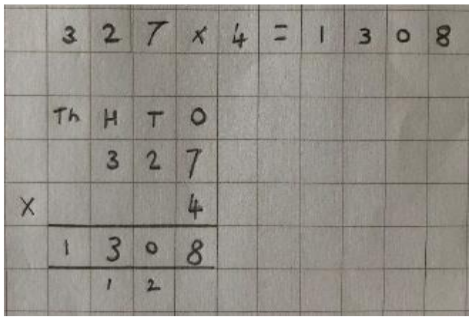
		 +20 +20 +20 +20 0 10 20 30 40 50 60 70 80 90	

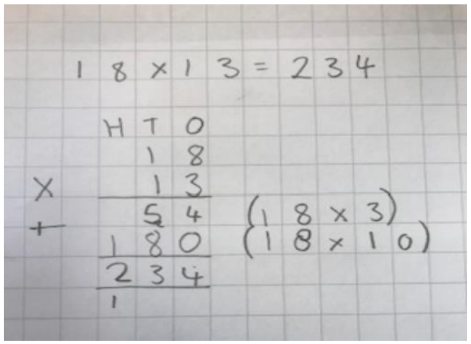
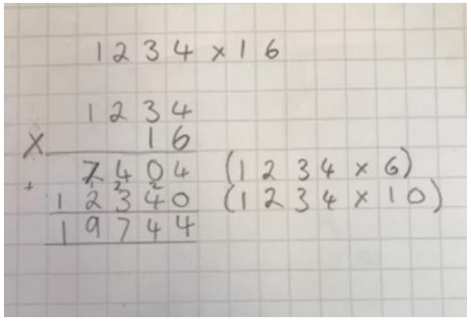
Understanding and using partitioning in multiplication	 12 × 4 is 4 groups of 10 and 4 groups of 2 12 × 4 = 40 + 8	 *4 × 3 = 12* *4 × 5 = 20* *12 + 20 = 32* *4 × 8 = 32* Use partitioning to multiply 2-digit numbers by a single digit. *18 × 6 = ?*  *18 × 6 = 10 × 6 + 8 × 6* *= 60 + 48* *= 108*	18 × 6 10 × 6 = 60 8 × 6 = 48 18 × 6 = 60 + 48 = 108

Grid method *Make sure that other methods for multiplication are reinforced e.g multiplying by 4 = doubling and doubling again or multiplying by 9 by multiplying by 10 and subtracting.*	Show the links with arrays to first introduce the grid method.  Move onto Base ten to move towards a more compact method. 14 x 3  Possibility of introducing Place Value counters: 123 x 4	Children can represent their work with concrete resources in a pictorial way that they understand.  	 Then once secure moving onto: 

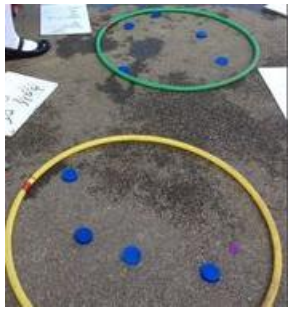
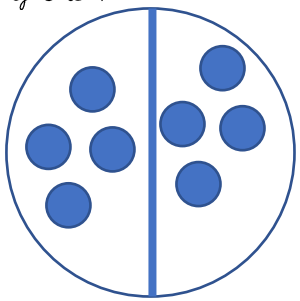
	 We are multiplying by 4 so need 4 more rows.  Add up each column, starting with the ones, making exchanges where required.		

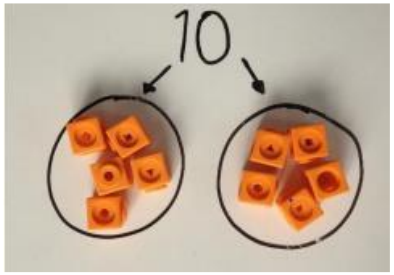
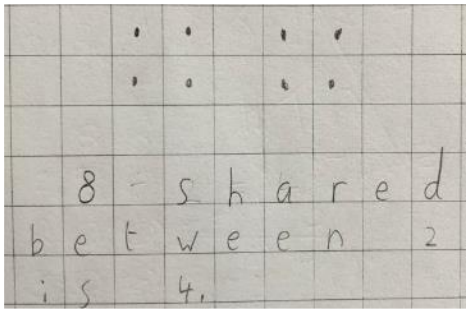
Year 4 Multiplication			
Objective and strategy	Concrete	Pictorial	Abstract
Multiplying by multiples of 10 and 100	Use Base 10 to understand how to multiply by multiples of 1, 10 and 100  This could lead to a discussion that 3 x 6 is ten times smaller etc.	Represent concrete resources pictorially 	Children use known facts and understanding of place value and commutativity to multiply mentally. 4 x 7 = 28 4 x 70 = 280 40 x 7 = 280 4 x 700 = 2800 400 x 7 = 2800
Use knowledge of commutativity and factors to simplify some multiplications	 *Each sheet has 2 × 5 stickers.* *There are 3 sheets.* *There are 5 × 2 × 3 stickers in total.* 5 × 2 × 3 = 30 10 × 3 = 30	 *2 × 6 × 10 = 120* *12 × 10 = 120* *10 × 6 × 2 = 120* *60 × 2 = 120*	24 x 5 = 12 x 2 x 5 12 x 2 x 5 = 12 x 10 = 120 Therefore 24 x 5 = 120
Grid method recap 2 digit by 1 digit Then 3 digits by 1 digit	Use Place Value counters as in Year 3	As Year 3	As Year 3

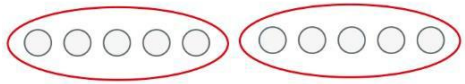
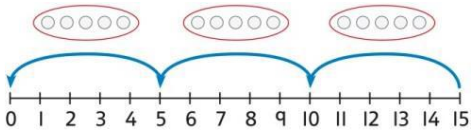
Column multiplication	Children can continue to be supported by Place Value counters at the multiplication stage. It is important at this stage that they multiply the ones first. 321 x 2  It is important to model the corresponding written multiplication next to it.	 	 This will lead to a compact method. 

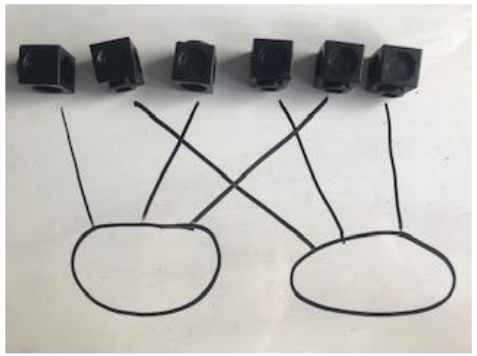
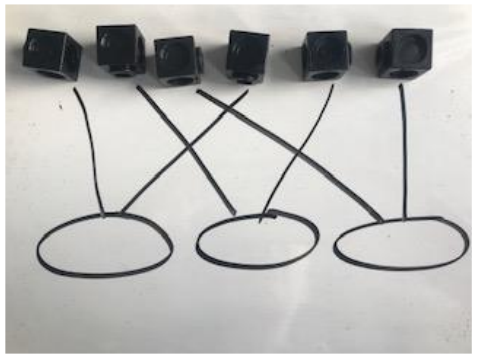
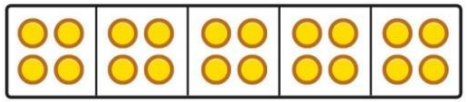
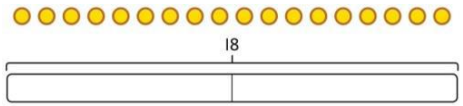
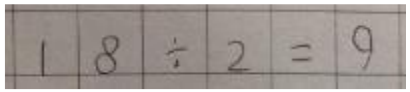
Year 5/6 Multiplication			
Objective and strategy	Concrete	Pictorial	Abstract
Column multiplication for 3 and 4 digit by 1 digit	As Year 4 extending up to 4 digit numbers. Manipulatives may still be used with the corresponding calculation alongside.	As Year 4 extending up to 4 digit numbers.	As Year 4 extending up to 4 digit numbers.  

Division

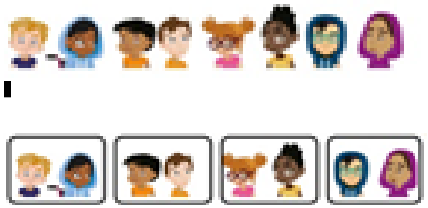
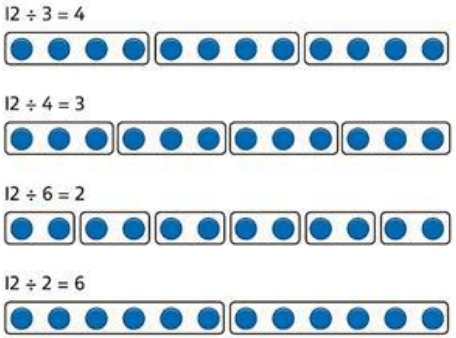
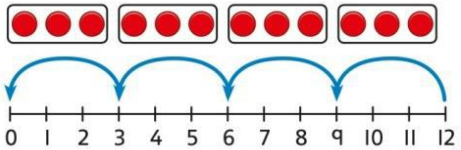
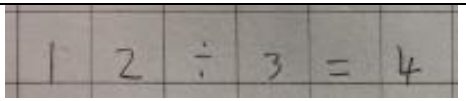
EYFS Division			
Children use concrete objects to count and share equally into 2 groups 	They count a set of objects and halve them by making two equal groups. 	They understand sharing and halving as dividing by 2. 	They use concrete and pictorial representation to record their calculations. *Half of 8 is 4* 

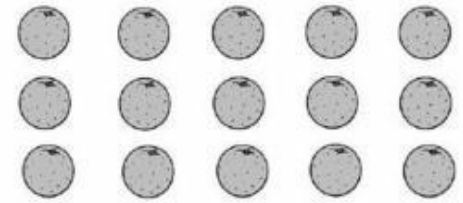
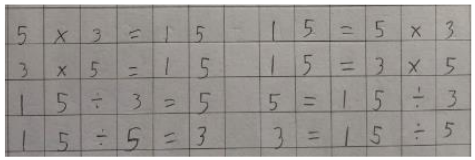
Year 1 Division			
Objective and strategy	Concrete	Pictorial	Abstract
Division as sharing	I have 10 cubes can you share them equally between two groups?   	Children draw pictures or shapes to share quantities 	*"12 shared between 3 is 4."* There is no requirement to use the symbol for division in Y1. This could be verbalised or written using stem sentences.

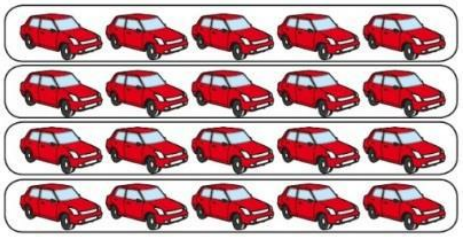
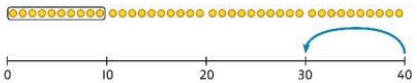
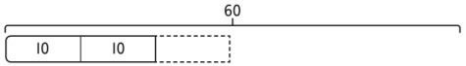
Division as grouping *It is <u>vital</u> that children are given the opportunity to look at division as grouping rather than just sharing.*	Divide quantities into equal groups 10 ÷ 2 = 5 	Represent a whole and work out how many equal groups.  *There are 10 in total.* *There are 5 in each group.* *There are 2 groups.*	There is no requirement to use the symbol for division in Y1. This could be verbalised or written using stem sentences. Children may relate grouping to counting back in steps of 2, 5 or 10. 

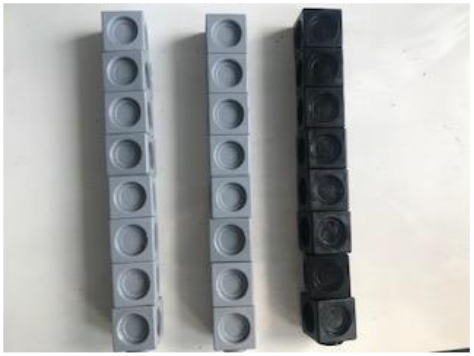
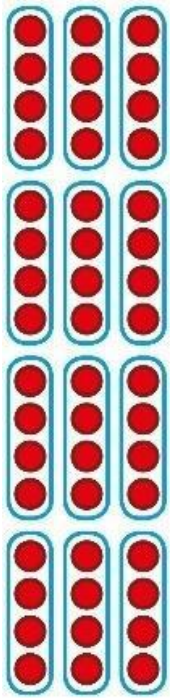
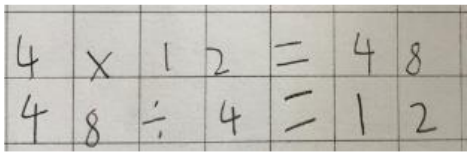
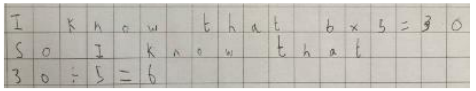
Year 2 Division			
Objective and strategy	Concrete	Pictorial	Abstract
Division as sharing	Start with a whole and share into equal parts, one at a time.  *12 shared equally between 2. They get 6 each.* Start to understand how this also relates to grouping. To share equally between 3 people, take a group of 3 and give 1 to each person. Keep going until all the objects have been shared 	Represent the objects shared into equal parts using a bar model.  20 shared into 5 equal parts. There are 4 in each part. Use a bar model to support understanding of the division.  18 ÷ 2 = 9	Children will need to be introduced to the symbol for division.  Children should be able to verbalise this as 18 divided into 2 groups means there are 9 in each group.

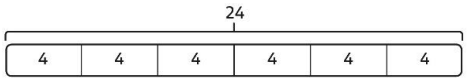
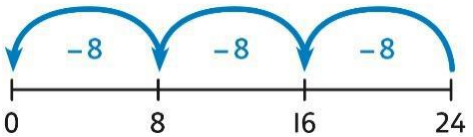
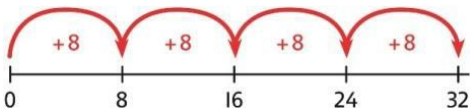
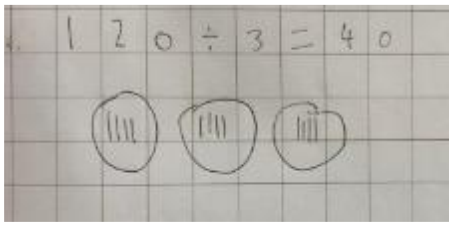
	6 shared equally between 3. They get 2 each.		

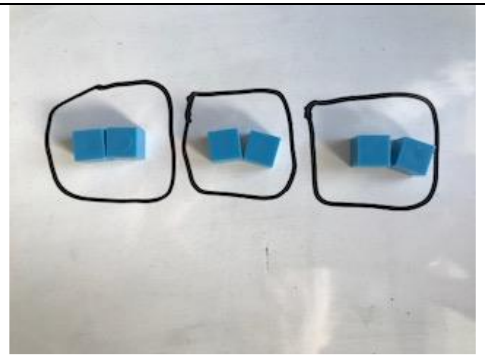
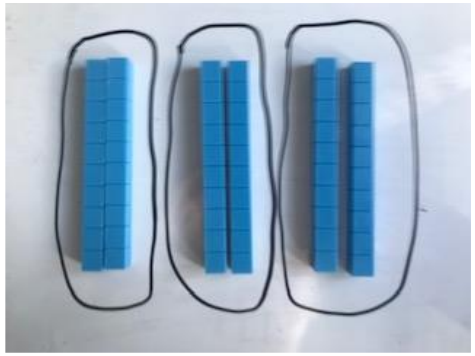
Division as grouping	Children understand how to make equal groups from a whole.  8 divided into 4 equal groups. There are 2 in each group.	Children understand the relationship between grouping and the division statements.  Children understand how to relate division by grouping to repeated subtraction.  There are 4 groups now. 12 divided into groups of 3. 12 ÷ 3 = 4	 Children should be able to verbalise this as 12 grouped into 3s = 4 groups

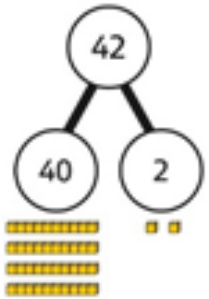
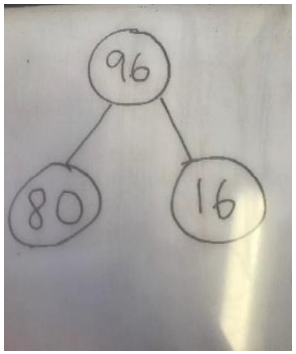
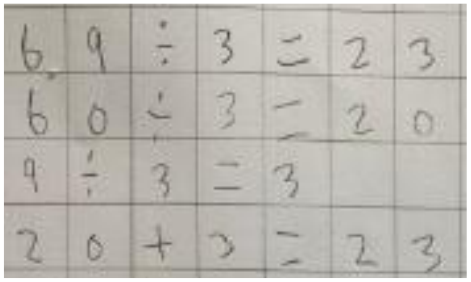
Division with arrays	Link multiplication to division by creating an array and thinking about the number sentences that can be created.  15 ÷ 3 = 5 15 ÷ 5 = 3 3 = 15 ÷ 5 5 = 15 ÷3 3 × 5 = 15 5 × 3 = 15 15 = 3 × 5 15 = 5 × 3	Draw an array and use lines to split it into groups to make multiplication and division sentences. 	Find the inverse of multiplication and division sentences by creating eight linking number sentences.  5 x 3 = 15 ‖ 15 = 5 x 3 3 x 5 = 15 ‖ 15 = 3 x 5 15 ÷ 3 = 5 ‖ 5 = 15 ÷ 3 15 ÷ 5 = 3 ‖ 3 = 15 ÷ 5

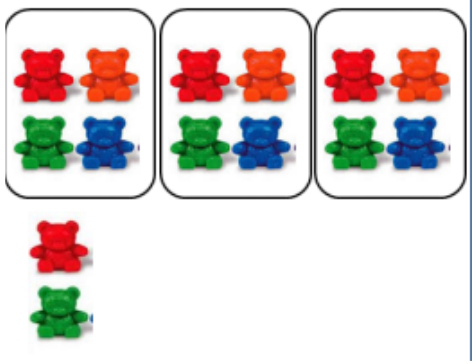
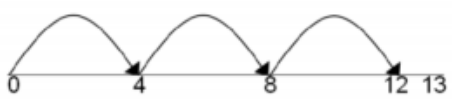
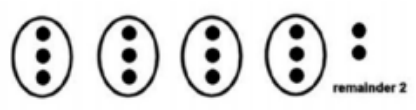
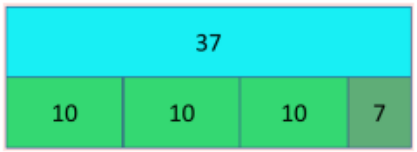
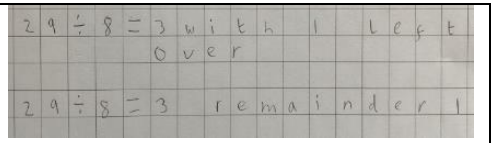
Use known times-tables to solve division	Understand the relationship between multiplication facts and division.	Link equal grouping with repeated subtraction and known times-table facts to support division.	Relate times-table knowledge directly to division.
	 *4 groups of 5 cars is 20 cars in total.* *20 divided by 4 is 5.*	 40 divided by 4 is 10. Use a bar model to support understanding of the link between times-table knowledge and division.  	1 × 10 = 10 2 × 10 = 20 3 × 10 = 30 4 × 10 = 40 5 × 10 = 50 6 × 10 = 60 7 × 10 = 70 8 × 10 = 80 I used the 10 times-table to help me. 3 × 10 = 30. *I know that 3 groups of 10 makes 30, so I know that 30 divided by 10 is 3.* *3 × 10 = 30 so 30 ÷ 10 = 3*

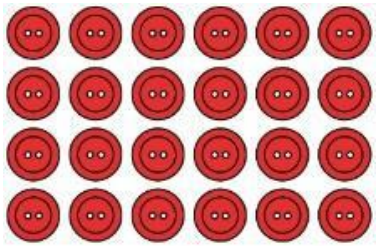
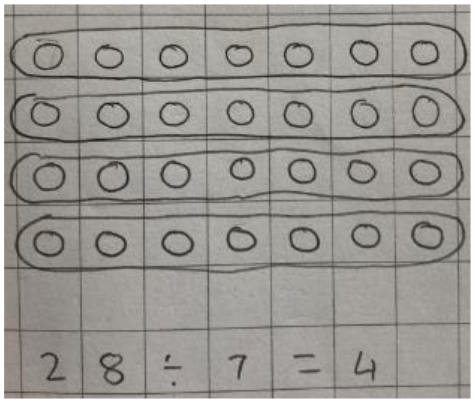
Year 3 Division			
Objective and strategy	Concrete	Pictorial	Abstract
Use known times-tables to solve division	Use knowledge of known times-tables to calculate divisions.  24 divided into groups of 8. There are 3 groups of 8.	Use knowledge of known times-tables to calculate divisions.  48 ÷ 4 = 12 48 divided into groups of 4. There are 12 groups. 	Use knowledge of known times-tables to calculate divisions. 

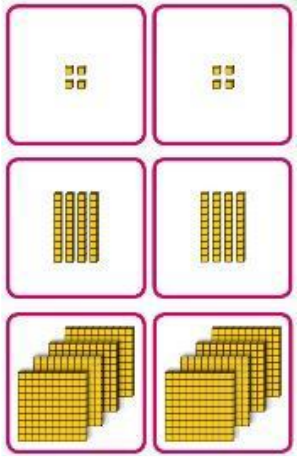
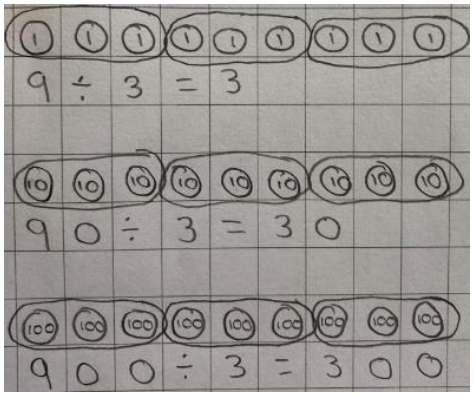
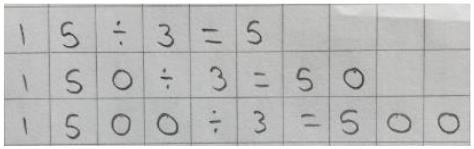
		A bar model may represent the relationship between sharing and grouping.  24 ÷ 4 = 6 24 ÷ 6 = 4 Children understand how division is related to both repeated subtraction and repeated addition.  24 ÷ 8 = 3  	
Use known facts to divide multiples of 10	Use place value equipment to understand how to divide by unitising. Divide 6 ones between 3 groups.	Divide multiples of 10 by unitising.  12 tens shared into 3 equal groups.	Divide multiples of 10 by a single digit using known times-tables. 

	 Now divide 6 tens between 3 groups.  What is the same? What is different?	4 tens in each group.	

Divide a 2 digit number by a 1 digit number using partitioning	Children explore dividing 2-digit numbers by using place value equipment.  42 ÷ 2 = ? 	Children explore which partitions support particular divisions. 42 ÷ 2 =  96 ÷ 8  	69 ÷ 3 = 69 is partitioned into 60 and 9. 

Children have an awareness of remainders Using the word remainder not the letter r	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.  Draw dots and group them to divide an amount and clearly show a remainder.  Use bar models to show division with remainders. 	

Year 4 Division			
Objective and strategy	Concrete	Pictorial	Abstract
Understand the relationship between multiplication and division, including times-tables	Use objects to explore families of multiplication and division facts.  4 × 6 = 24 24 is 6 groups of 4. 24 is 4 groups of 6. 24 divided by 6 is 4. 24 divided by 4 is 6.	Represent divisions using an array.  	Understand families of related multiplication and division facts. 

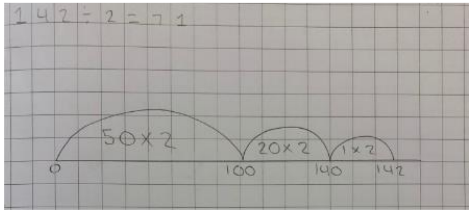
Dividing multiples of 10 and 100 by a single digit	Use place value equipment to understand how to use unitising to divide.  8 ones divided into 2 equal groups 4 ones in each group 8 tens divided into 2 equal groups 4 tens in each group 8 hundreds divided into 2equal groups 4 hundreds in each group	Draw the place value counters to support with calculation.  9 ÷ 3 = 3 9 tens divided by 3 is 3 tens. 9 hundreds divided by 3 is 3 hundreds.	Use known facts to divide 10s and 100s by a single digit.  15 ÷ 3 = 5 150 ÷ 3 = 50 1500 ÷ 3 = 500

<table>
<tr>
<td>Informal methods of dividing 2-digit and 3-digit numbers by a single digit</td>
<td>Use place value equipment to explore why different partitions are needed.

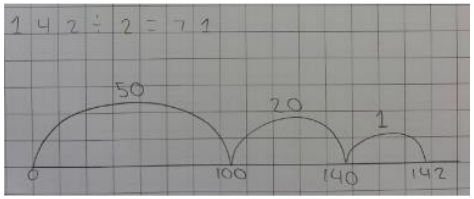
42 ÷ 3 = ?

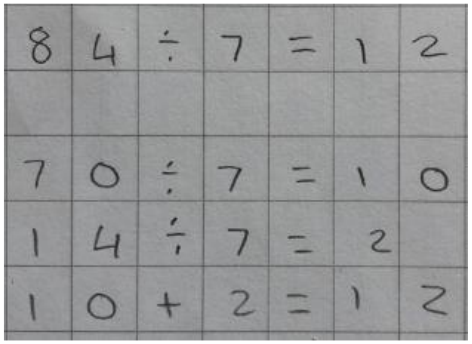
I will split it into 30 and 12, so that I can divide by 3 more easily.

  </td>
<td>Children use a number line to support:

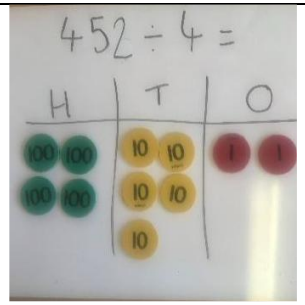
 

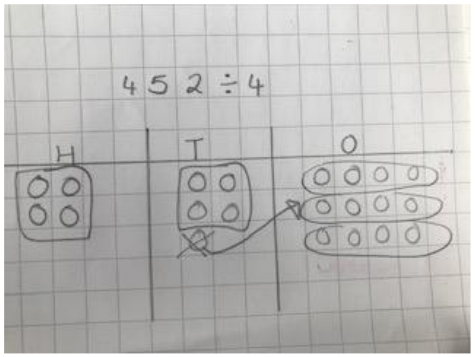
Then move to:

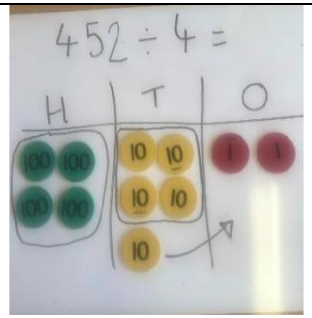
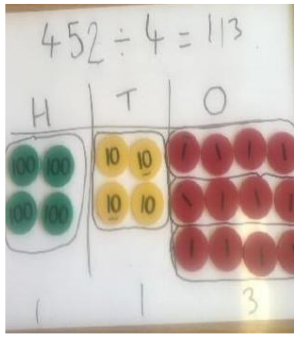
 
</td>
<td>Represent how to partition flexibly where needed.

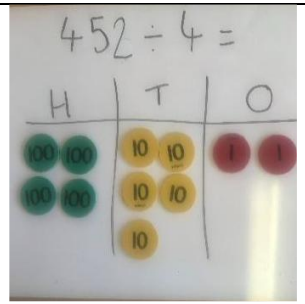
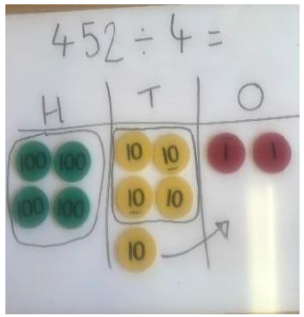
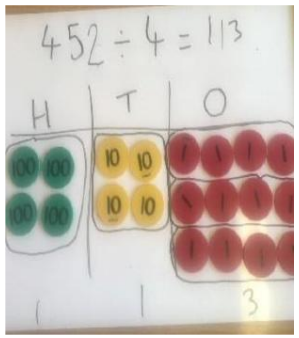
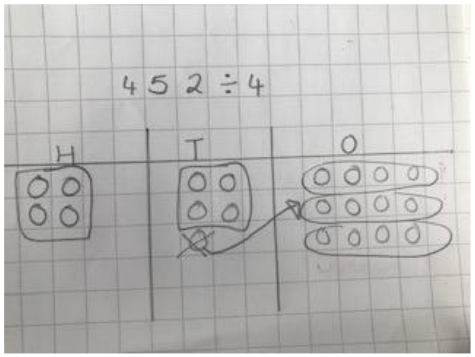
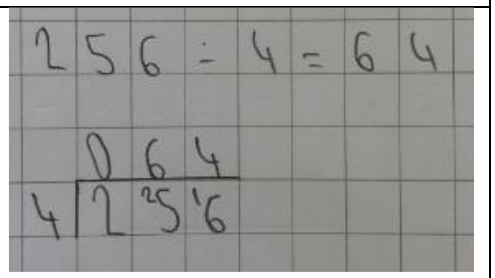
 

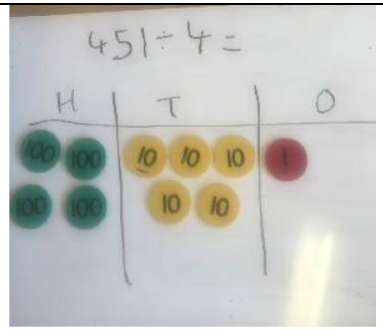
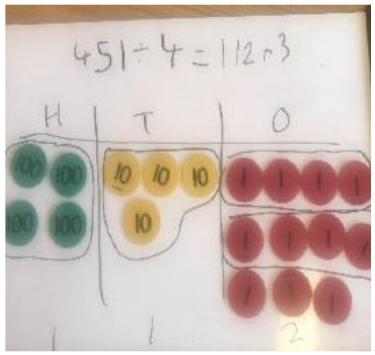
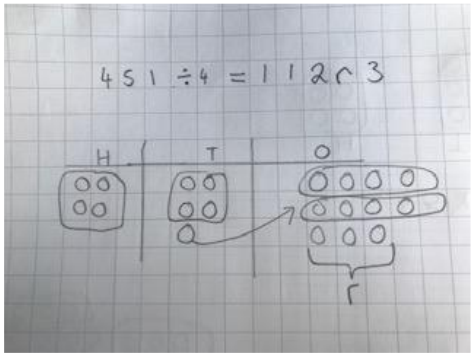
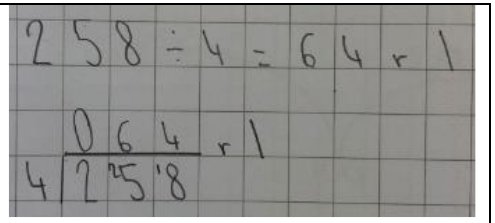
84 is partitioned into 70 and 14, as these are both divisible by 7.</td>
</tr>
<tr>
<td>Short Division

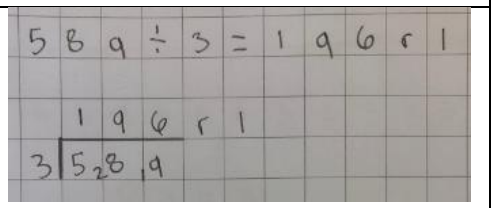
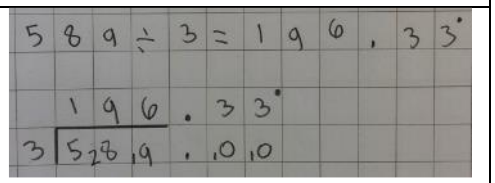
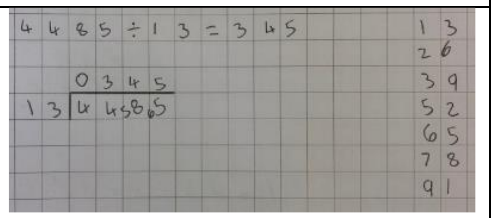
(up to 3 digits by 1-digit)</td>
<td> 
</td>
<td>Children can draw the place value counters.

 
</td>
<td></td>
</tr>
</table>

	 452 ÷ 4 = H T O 100 100 100 100 10 10 10 10 10 1 1  452 ÷ 4 = 113 H T O 100 100 100 100 10 10 10 10 1 1 1 1 1 1 1 1 1 1 1 3		

Year 5 Division			
Objective and strategy	Concrete	Pictorial	Abstract
Short Division	  	Children can draw the place value counters. 	

Short Division method with remainders represented using r.	 	Children can draw the place value counters. 	

Year 6 Division			
Objective and strategy	Concrete	Pictorial	Abstract
Short Division method with remainders	Manipulatives may still be used with the corresponding calculation alongside.		
Short Division method with decimal remainders	Manipulatives may still be used with the corresponding calculation alongside.		
2 digit Short Division method			
Long division