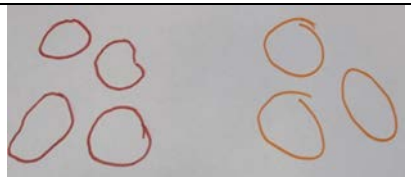
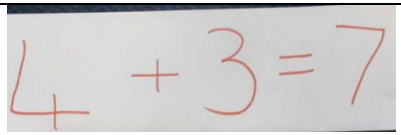
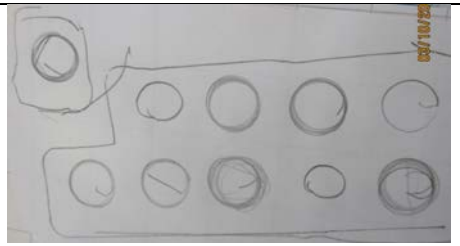
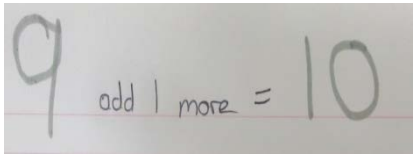
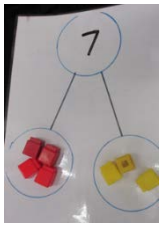
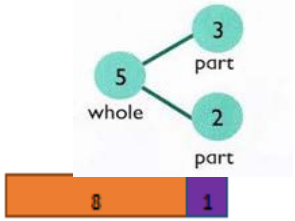
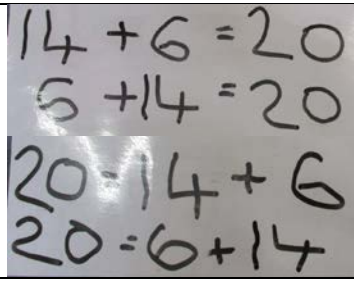
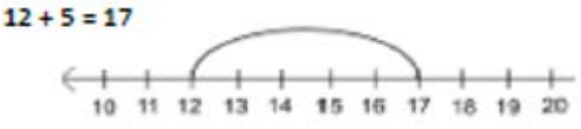
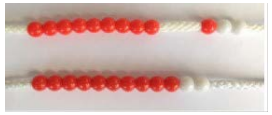
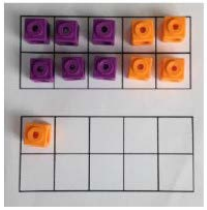
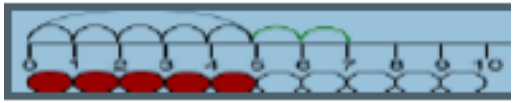
Calculation Guidance							
	EYFS	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6
	Use quantities and objects to add two single digit numbers and count on to find the answer One more Begin to use appropriate vocabulary	Regrouping to make 10 using 10 frames. Starting at the bigger number and counting on using concrete materials Combining two parts to make a whole: part whole model Represent and use number bonds to 20.	Combine two numbers Use known facts Adding 3 single digits Adding set of 10. Bar Model Add a 2-digit number and ones, two 2-digit numbers. 3 1-digit numbers	Add numbers mentally up to three digits Add numbers with up to three digit using a formal column method Column addition without regrouping. Column addition with regrouping. Use inverse operations to check answers	Add numbers with up to four digits using formal methods Estimate and use inverse to check calculations Solving addition two-step problems in context. **Column addition regrouping.**	Add whole numbers with more than four digits using formal methods Add numbers mentally with increasingly large numbers Use of place value counters for adding decimals. **Column addition regrouping.**	Using knowledge of the order of operations to carry out calculations involving all four operations Use of place value counters for adding decimals Abstract methods **Column addition regrouping.**
Subtraction	Use quantities and objects to subtract two single digit numbers and count back to find the answer One less Taking away ones Begin to use appropriate vocabulary	Subtract one and two digit numbers to 20 using 10 frames Starting at the bigger number and counting back using concrete materials Taking away ones Find the difference Part part whole Make 10 Bar Model	Subtract two numbers Regroup a ten into ten ones. Partition to subtract without regrouping. Make 10.	Subtract numbers mentally up to three digits Subtract numbers with up to three digit using a formal column method. Column subtraction without regrouping. Column subtraction with regrouping. Use inverse operations to check answers	Subtract numbers with up to four digits using formal methods Estimate and use inverse to check calculations **Column subtraction include regrouping.**	Subtract whole numbers with more than four digits using formal methods Subtract numbers mentally with increasingly large numbers **Column subtraction include regrouping.**	Using knowledge of the order of operations to carry out calculations involving all four operations **Column subtraction include regrouping.**

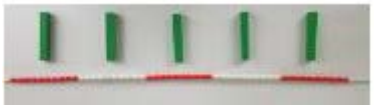
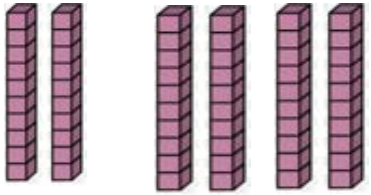
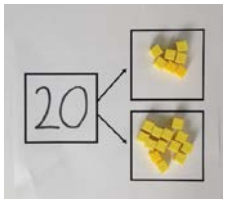
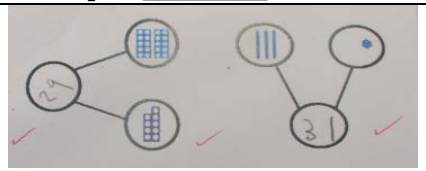
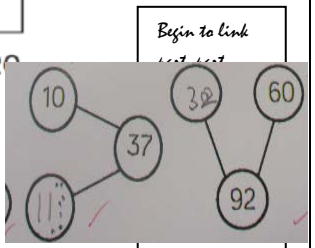
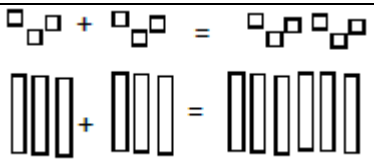
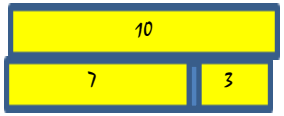
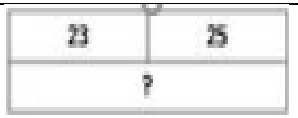
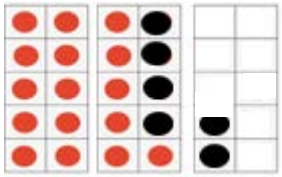
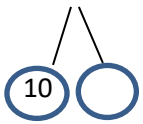
EYFS ADDITION

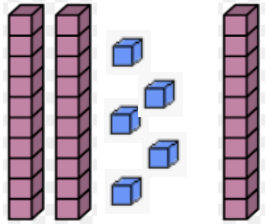
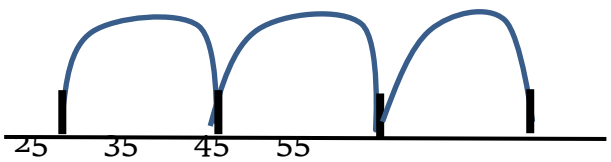
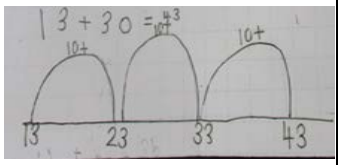
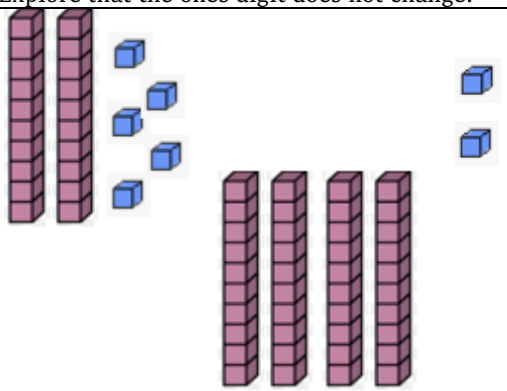
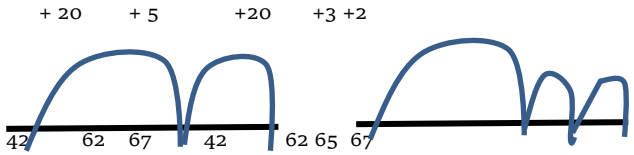
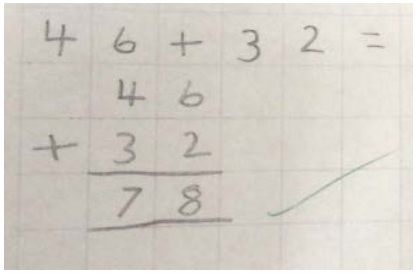
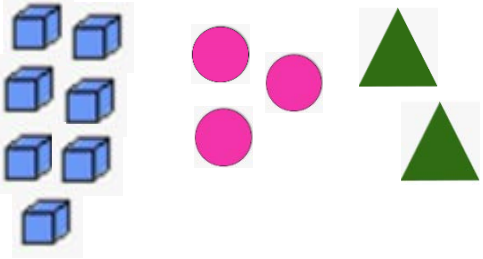
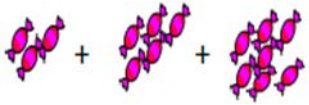
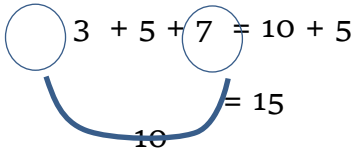
Objective & Strategy	Concrete	Pictorial	Abstract
Use quantities and objects to add two single digit numbers and count on to find the answer.	 'Four toys and I add three toys... how many altogether'	 Draw a representation of each number and group together	 Starting to form number sentences
One more.	 9+1 'Nine toys and one more makes 10'	 Draw a representation of each number and group together	
The introduction and use of appropriate vocabulary is important at this stage.			

Y1 ADDITION

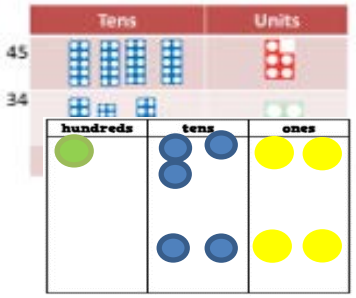
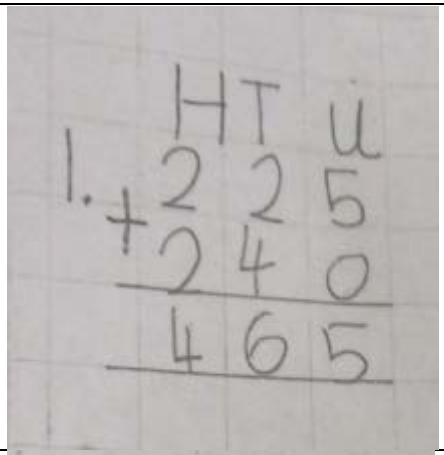
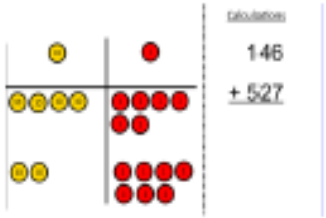
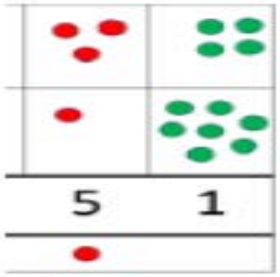
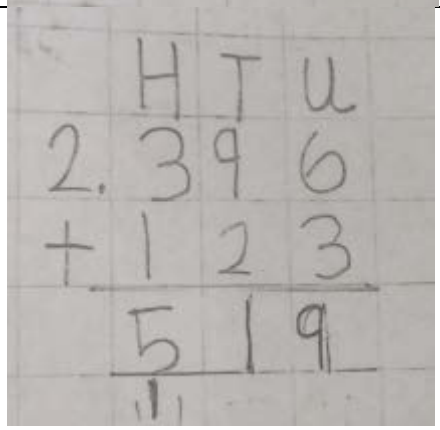
Objective & Strategy	Concrete	Pictorial	Abstract
Combining two parts to make a whole: part- whole model.	 Use part part whole model (left) Use cubes to add two numbers together as a group or in a bar. 	Use pictures to add two numbers together as a group or in a bar.  	
Starting at the bigger number and counting on.	Start with the larger number on the bead string and then count on to the smaller number 1 by 1 to find the answer. 	 Start at the larger number on the number line and count on in ones or in one jump to find the answer.	5 + 12 = 17 Place the larger number in your head and count on the smaller number to find your answer.
Regrouping to make 10. **This is an essential skill for column addition later.**	Start with the bigger number and use the smaller number to make 10. Use ten 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 & use number bonds and related subtraction facts within 20.	2 more than 5. 	 	Emphasis should be on the language ‘1 more than 5 is equal to 6.’ ‘2 more than 5 is 7.’ ‘8 is 3 more than 5.’

Y2 ADDITION

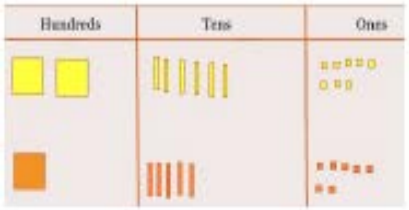
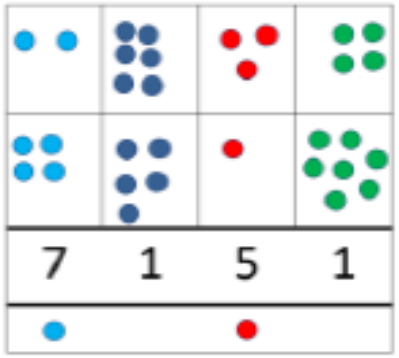
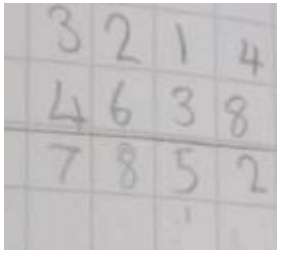
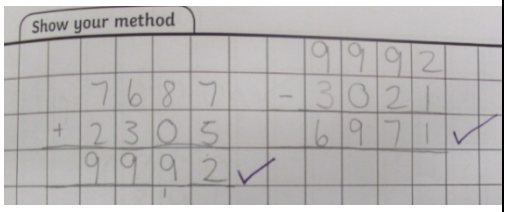
Objective & Strategy	Concrete	Pictorial	Abstract
Adding multiples of ten.	 Using dienes, Base 10, bead strings or equivalent to model units of 10 addition	 + 2tens+4tens =_____ 20 + 40 =_____	20 + 40 = 60 70 = 50 + 20 40 ☐ + ☐ = 90
Use known number facts. Part part whole.	 Children explore ways of making numbers within 20 with apparatus.	 Numbers split into Tens (part) and Ones (part) with pictures to make the whole number.	20 – ☐ = ☐ ☐ + ☐ = 20 
Using known facts.	 3 ones + 3 ones = 6 ones 3 tens + 3 tens = 6 tens (make links)	Children draw representations of tens and ones 	4 + 5 = 9 Leads to 40 + 50 = 90 Leads to 400 + 500 = 900
Bar model.	 3 + 4 = 7	 7 + 3 = 10 	 23 + 25 = 48
Add the following: a 2-digit number and ones.	 16 + 5 = 21 Children explore the pattern. 16 + 6 = 21 26 + 6 = 31	14 + 5 = 19  Add the ones: 4 + 5 = 9 Add the tens to the ones: 10 + 9 = 19 Use part whole model and number line to model.	Explore related facts. 16 + 5 = 21 5 + 17 = 21 21 – 5 = 16 21 – 16 = 5

Add a 2-digit number and tens.	 25 + 10 = 35 Explore that the ones digit does not change.	25 + 30 +10 +10 +10 	36 + 10 = 47 36 + 20 = 57 36 + = 67 
Add two 2-digit numbers.	 Model using place value counters, dienes or numicon.	 Use number line and bridge ten. Use part whole where necessary.	
Add 3 1-digit numbers.	 Combine to make 10 first and then add third digit.	 Regroup and draw representations. 	 Combine the 2 numbers that make/bridge 10 then add the third.

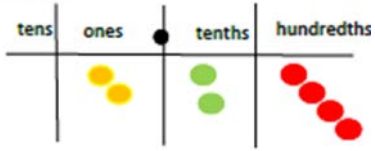
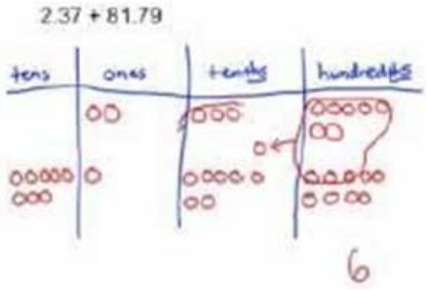
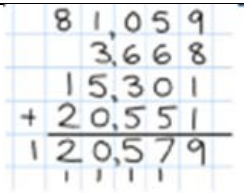
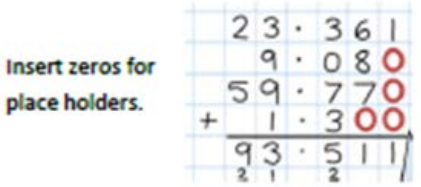
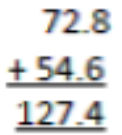
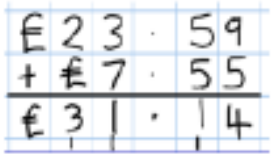
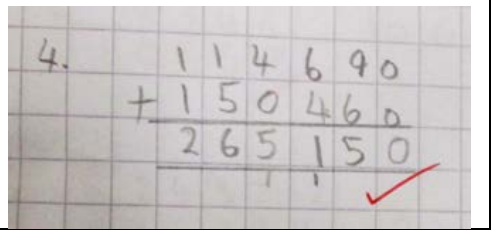
Y3 ADDITION

Objective & Strategy	Concrete	Pictorial	Abstract
Column Addition— no regrouping. (friendly numbers) Add two or three 2 or 3-digit numbers.	Add together the ones first then the tens.  132 + 22	Children move to drawing the counters using a tens and one frame.  	
Column addition with regrouping.	 Exchange ten ones for a ten. Model using apparatus (e.g. numicon and counters)	Children can draw a representation of the grid, to support understanding, carrying the ten.  	
Mental methods should include increasingly large numbers, fractions and decimals. Modelling, including bars and number lines can support these methods.			

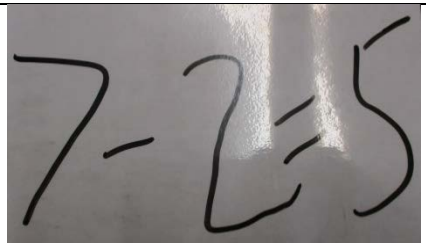
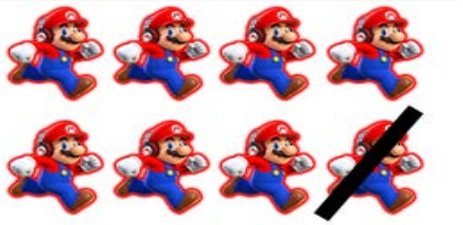
Y4 ADDITION

Objective & Strategy	Concrete	Pictorial	Abstract
Add numbers with up to four digits using formal methods. Column Addition with regrouping. Solving addition two-step problems in context choosing appropriate operations.	Children continue to use apparatus to add, exchanging ten ones for a ten and ten tens for a hundred and ten hundreds for a thousand 		 Continue from previous year groups. Relate to money and measures 
Estimate and use inverse to check calculations.			

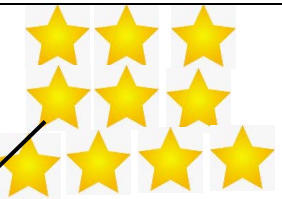
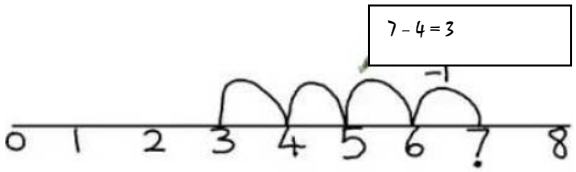
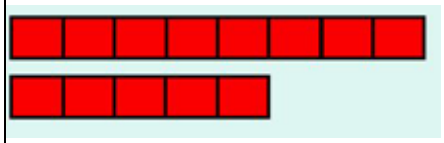
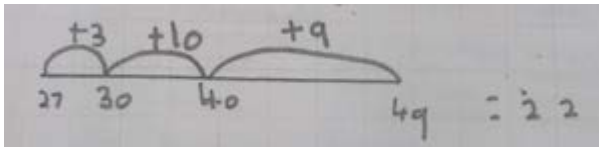
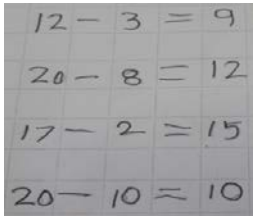
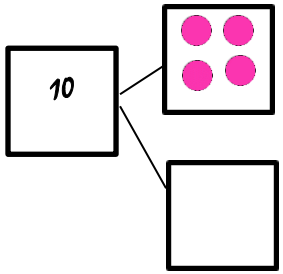
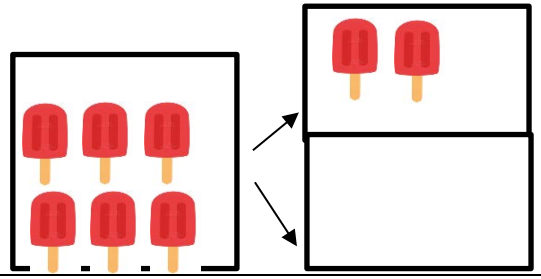
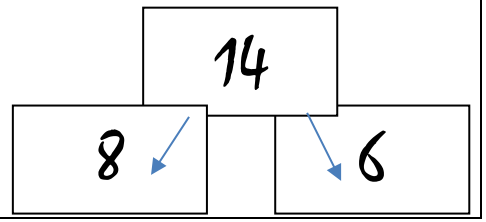
Y5 AND Y6 ADDITION

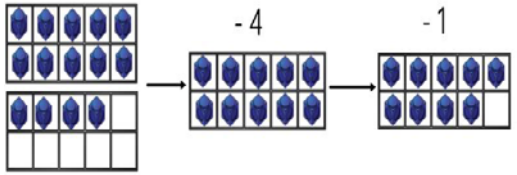
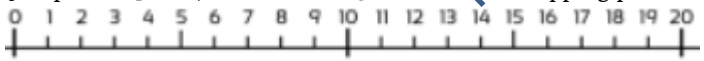
Objective & Strategy	Concrete	Pictorial	Abstract
Add numbers with more than 4 digits. Add decimals with 2 decimal places, including money. Column Addition with regrouping.	Continue to use apparatus and practical resources – e.g. place value cards  As year 4  Introduction of decimals and model exchange for addition	 	    

EYFS SUBTRACTION

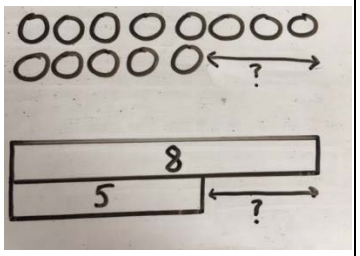
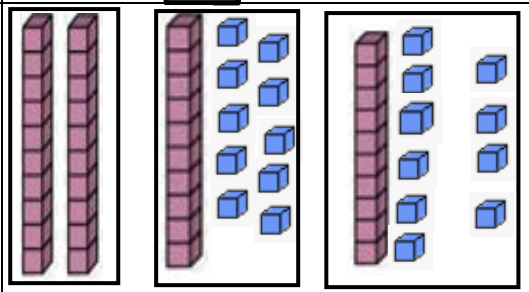
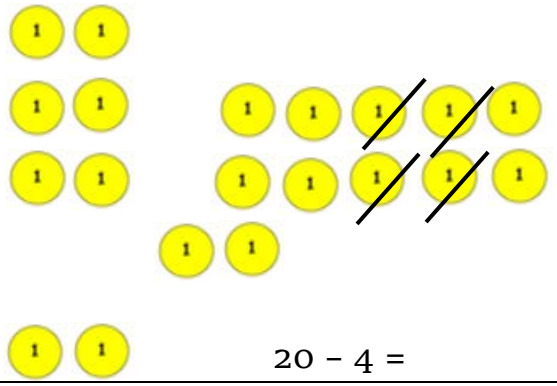
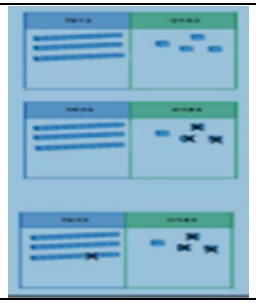
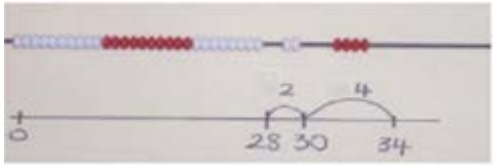
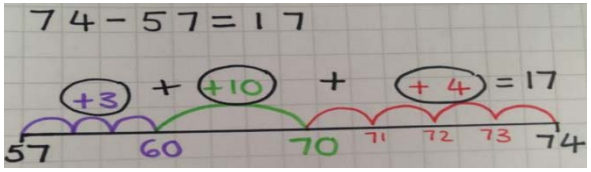
Objective & Strategy	Concrete	Pictorial	Abstract
Use quantities and objects to subtract two single digit numbers and count back to find the answer.	 "7 animals but 2 birds flew away. So now I have 5."	 Draw a representation of each number and cross two off.	 Starting to form number sentences
One less/Taking away ones.	 "I have 8 rocks and I take one away. Got 7."	 Use pictures and cross out one picture.	8-1=7 Starting to form number sentences
The introduction and use of appropriate vocabulary is important at this stage.			

Y1 SUBTRACTION

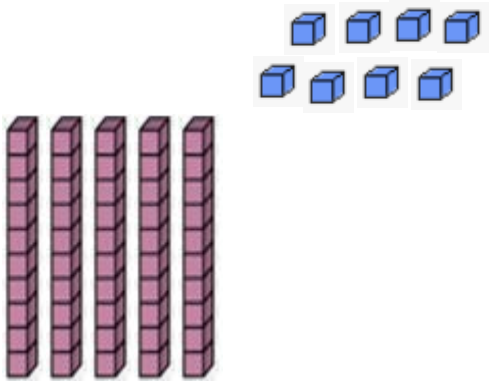
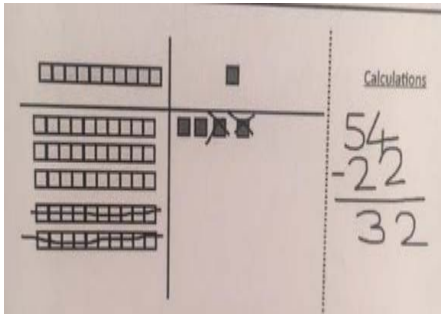
Objective & Strategy	Concrete	Pictorial	Abstract
Taking away ones.	Use physical objects, counters, cubes etc to show how objects can be taken away. (See early years subtraction)  4- 2 = 2	  15 – 3 = 12 Children cross out the objects to show what has been taken away.	4 – 2 = 3 15 – 3 = 12
Counting back.	  Move objects away from the group, counting backwards.	 Count back in ones using a numberline.	Put 12 in your head and count back 3. What number are you on? Jack has 15 pencils he gives 5 away. How many does he have left over?
Find the difference.	Compare objects and amounts.  8 3 Eight is five more than three.	Count on using a number line to find the difference.  Begin to encourage children to use an empty number line to support abstract concepts.	Lucy has 12 sweets and her sister has 5. How many more does Lucy have than her sister? 
Represent and use number bonds and related subtraction facts within 20. Part Part Whole Model.			Move to using numbers within the part whole model. 

	If ten is the whole and 6 is one of the parts, what is the other part?		
Make 10.	 Make 14 on the 10 frame. Take 4 away to make 10, take one more so you have taken 5. **14 – 5 = 9**	14 – 7 = 7 -3 -4 Jump back 4 first, then another 3. Use 10 as a stopping point. 	14 - 5 = 9 4 1 14 – 4 = 10 10 – 1 = 9 16 -8. How many do we take off first to get to 10? How many left to take off?
Bar Model.	I have 12 apples and I eat 3. How many would I have left? 		 10 = 8 -2 10 = 2- 8 10 -2 = 8 10 -8 = 2

Y2 SUBTRACTION

Objective & Strategy	Concrete	Pictorial	Abstract
Subtract two numbers.	 8-5= ☐	Children to draw the cubes/other concrete objects which they have used or use the bar model to illustrate what they need to calculate. 	Find the difference between 8 and 5. 8 – 5, the difference is Children to explore why 9 - 6 = 8 – 5 = 7 – 4 have the same difference. 8 – 5 = 3
Regroup a ten into ten ones.			20 – 4 = ■
Partition to subtract without re-grouping.	34 – 13 = 21 Use dienes to show how to partition the number when subtracting without re-grouping. 	Children draw representations of Deines and cross off. 	43–21 = 22
Make 10 strategy. Progression could be crossing one ten, crossing more than one ten, crossing the hundreds.	Use a bead or bar bead strings to model counting to next ten and the rest. 	 Use a number line to count on to the next ten and then the rest.	93–76 = 17
Recognise inverse operations			

Y3 SUBTRACTION

<table>
<tr><th>Objective & Strategy</th><th>Concrete</th><th>Pictorial</th><th>Abstract</th></tr>
<tr>
<td>Column subtraction without regrouping.</td>
<td> 
58 -23 =
Use numicon or base 10 to model.</td>
<td>Draw representations to support understanding.
 
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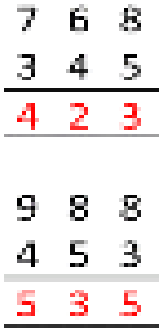
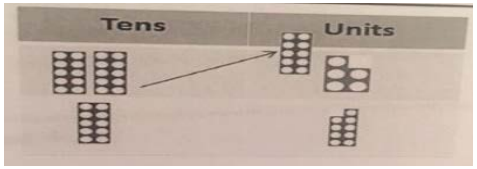
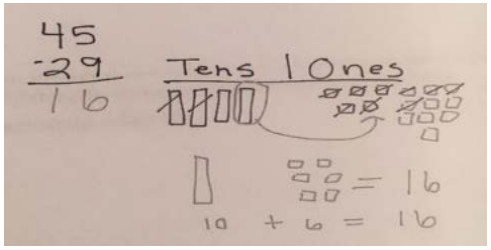
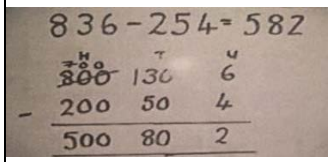
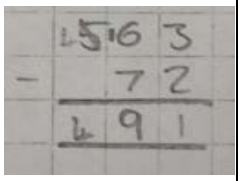
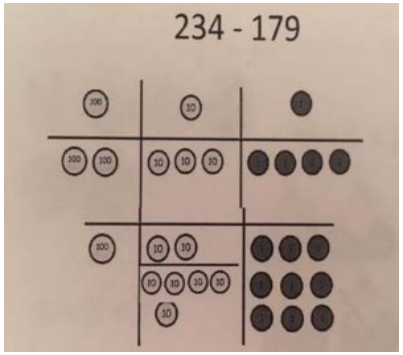
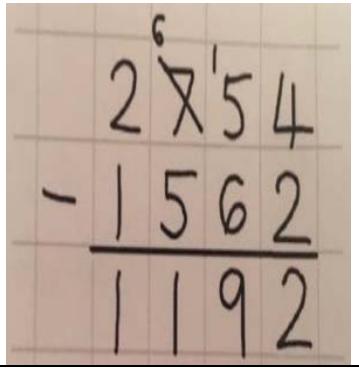
<td> 
</td>
</tr>
<tr>
<td>Column subtraction with regrouping.</td>
<td> 

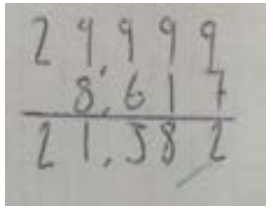
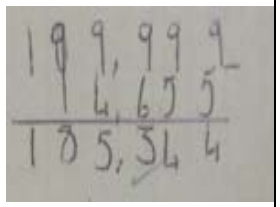
Begin with Base 10 or Numicon. Move onto place value counters, modelling the exchange of a ten into ones.</td>
<td> 

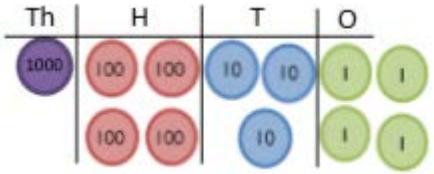
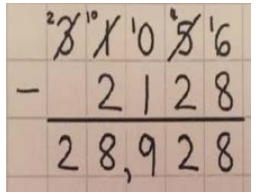
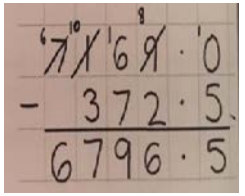
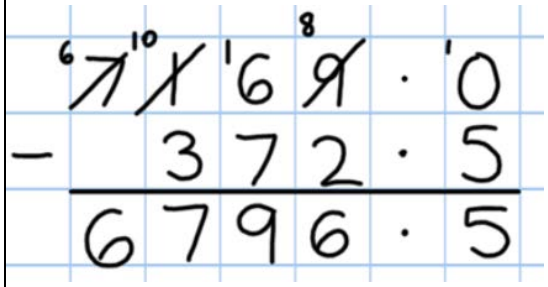
Children may draw representations to support their understanding.</td>
<td> 

Begin by partitioning into place value columns.
Then move to formal method.
 
</td>
</tr>
<tr><td colspan="4">Use inverse operations to check answers</td></tr>
</table>

Y4 SUBTRACTION

Objective & Strategy	Concrete	Pictorial	Abstract
Subtracting tens and ones. Subtract numbers with up to four digits using formal methods. Introduce decimal subtraction through context of money. **Column subtraction with regrouping.**		Children can draw place value equipment to show their exchange. As Year 3.	
Estimate and use inverse to check calculations.	**76 – 33 = 43. Inverse to check 33 + 43 = 76**		

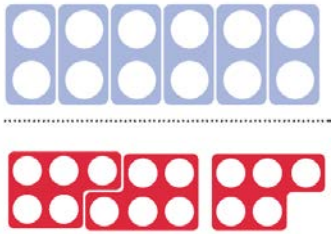
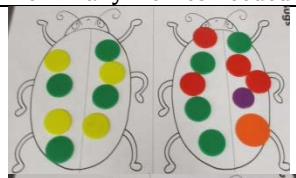
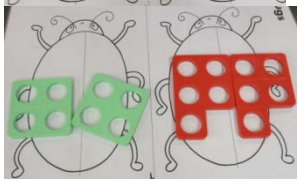
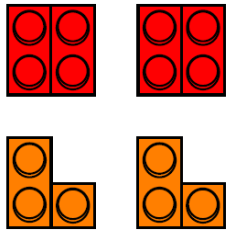
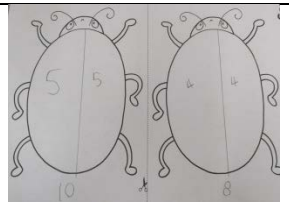
Objective & Strategy	Concrete	Pictorial	Abstract
Subtract whole numbers with more than four digits using formal methods.	 Use deines or place value counters.	Children may still use pictorial representations to support understanding.	 

(Year 5) Subtract with at least 4 digits, including money and measures.. **Column subtraction methods include regrouping.**			 
(Year 6) Subtract with increasingly large and more complex numbers and decimal values. **Column subtraction methods include regrouping.**		Children may still use pictorial representations to support understanding.	

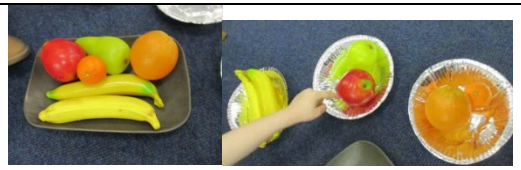
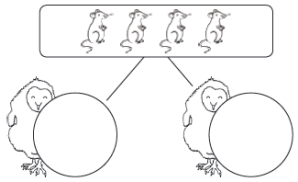
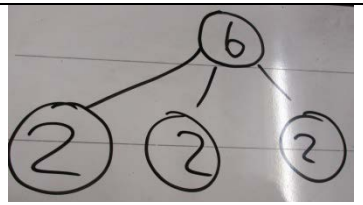
Year 5 and 6 Subtraction.

	EYFS	Y1	Y2	Y3	Y4	Y5	Y6
Multiplication	Recognise and make equal groups Doubling in a practical way.	Counting in multiples using concrete materials. Solve one step word problems using arrays and other concrete materials.	Show that multiplication can be done in any order (commutative) Solve problems using arrays and other concrete materials.	Write and calculate mathematical statements for multiplication using the times tables they know. Multiply 2 digit by 1 digit numbers using base 10 progressing to formal written methods.	Multiply two digits and three digit numbers by a one-digit number using a written formal method. Solve multiplication two-step problems in context choosing appropriate operations	Identify multiples and factors, including all factor pairs of a number. Multiply numbers up to 4 digits by a one or two-digit number using a formal written method including long multiplication for two digit numbers. Multiply numbers (*including decimals*) by 100, 100 and 1000.	Multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication. Identify common multiples.
Division	Halving and sharing in a practical way. Division as grouping	Solve one step word problems using arrays and other concrete materials.	Show that with division the biggest number has to go first. Solve problems using arrays and other concrete materials.	Write and calculate mathematical statements for division using the times tables they know. Divide 2 digit by 1 digit numbers using base 10 or other concrete materials. Division with a remainder using concrete objects and number facts.	Divide numbers up to 3 digits by a one-digit number using the formal written method. Division with a remainder.	Divide numbers up to 4 digits by a one-digit number using the formal written method. Interpret remainders appropriately for the context. Divide numbers (*including decimals*) by 100, 100 and 1000.	Use short division to divide a 4-digit number by a 2-digit number. Use long division to divide a 4-digit number by a 2-digit number. Solve multi step problems involving division.

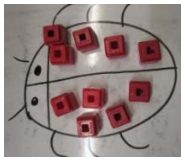
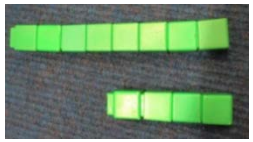
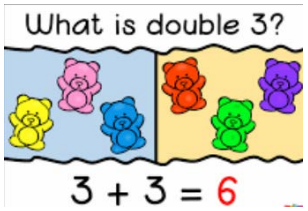
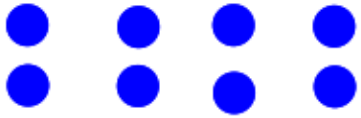
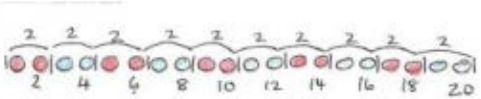
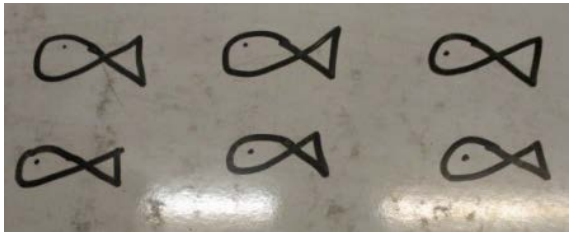
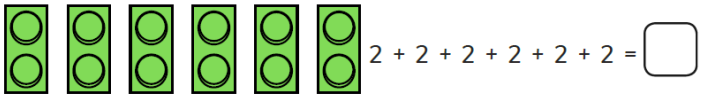
EYFS Multiplication

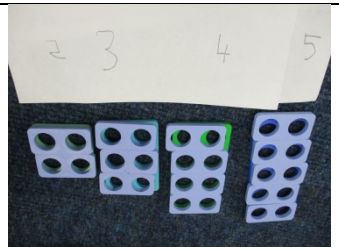
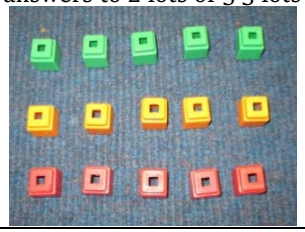
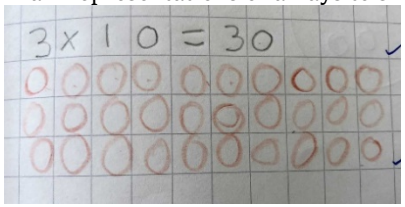
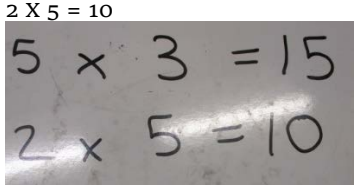
Objective & Strategy	Concrete	Pictorial	Abstract
Repeated addition	 Use numicon to count in 2's.  How many wellies needed for 3 children?	 Use pictures to count in 2's and 5's.	$2 + 2 + 2 = \square$ $3 + 3 + 3 = \square$
Doubling	  Use manipulatives to practically double.	 Use pictures double 4's and 2's.	 Writing doubles using a template.

EYFS Division.

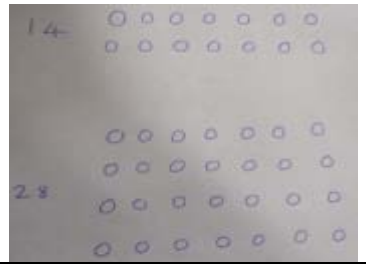
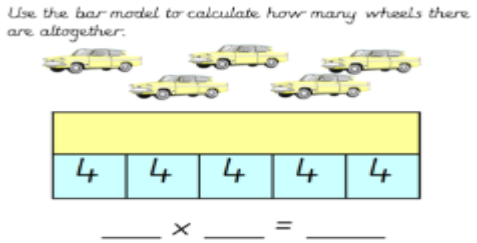
Objective & Strategy	Concrete	Pictorial	Abstract
Sharing	 Sharing the fruit equally into bowls.	 Use pictures to count in 2's and 5's.	 Sharing 6 into 3.

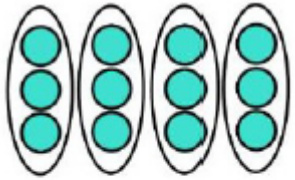
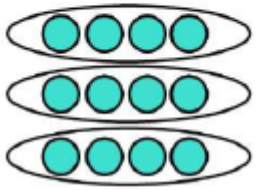
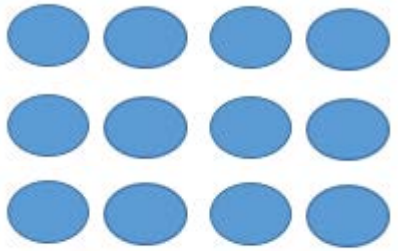
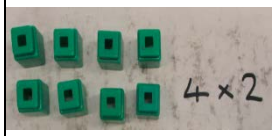
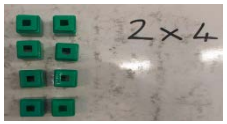
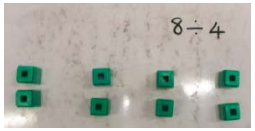
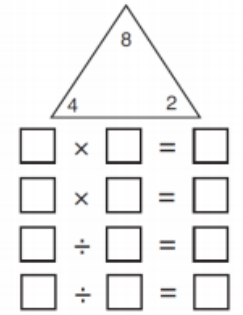
Y1 Multiplication

Objective & Strategy	Concrete	Pictorial	Abstract
Doubling	Use practical activities using manipulatives including cubes and Numicon to demonstrate doubling.  	Draw pictures to show how to double numbers. 	Double 4 is 8. Double 5 = 10
Counting in multiples	Count the groups as children skip counting, children may use their fingers as they are skip counting.  	 Children make representations to show counting in multiples. 	Count in multiples of numbers aloud. Write sequences with multiples of numbers. 2,4,6,8,10... 5,10,15,20,25,30.....
Making equal groups and counting the total	Use manipulatives to create equal groups.  	Draw and make representations. 	2 x 4 = 8 3 x 5 =15
Repeated addition	Using different objects to add equal groups.	Use pictorial including numberlines to solve problems. 	2+2+2+2=8

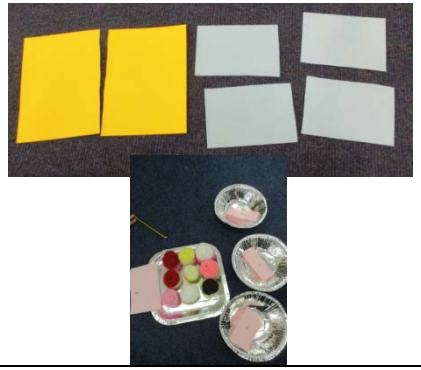
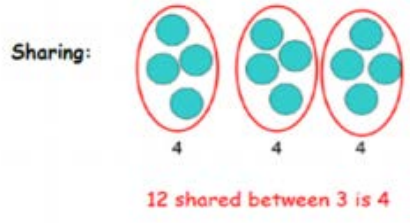
	 .		
Understanding arrays	Use objects laid out in arrays to find the answers to 2 lots of 5 3 lots of 2 etc. 	Draw representations of arrays to show understanding. 	3 X 2 = 6 2 X 5 = 10 

Y2 Multiplication

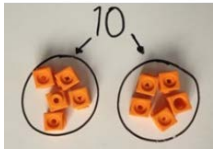
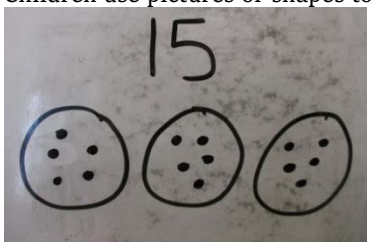
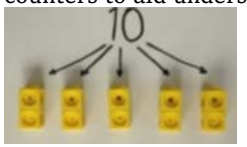
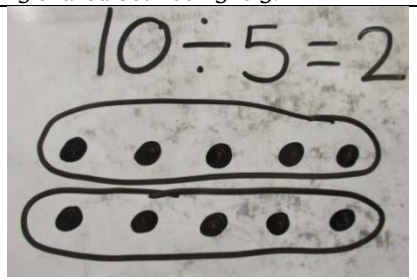
Objective & Strategy	Concrete	Pictorial	Abstract
Doubling	Model doubling using dienes and PV counters. 	Draw pictures and representations to show how to double numbers. 	Partition a number and then double each part before recombining it back together.
Counting in multiples of 2, 3, 4, 5, 10 from 0 (repeated addition)	Count the groups as children are skip counting, children may use their fingers as they are skip counting. Use bar models.  5 + 5 + 5 + 5 + 5 + 5 + 5 + 5 = 40  	Number lines, counting sticks 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.

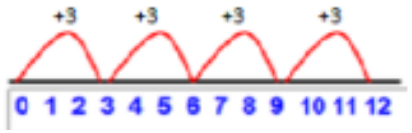
Multiplication is commutative	Create arrays using counters and cubes and Numicon.   Pupils should understand that an array can represent different equations and that, as multiplication is commutative, the order of the multiplication does not affect the answer.  	Use representations of arrays to show different calculations and explore commutativity.  	12 = 3 × 4 12 = 4 × 3  4 + 4 + 4 = 12 3 + 3 + 3 +3 = 12 4 x 3 = 12 3 x 4 = 12
Using the Inverse This should be taught alongside division, so pupils learn how they work alongside each other.	Use concrete apparatus to show number families.     	 	2 x 4 = 8 4 x 2 = 8 8 ÷ 2 = 4 8 ÷ 4 = 2 8 = 2 x 4 8 = 4 x 2 2 = 8 ÷ 4 4 = 8÷ 2 Show all 8 related fact family sentences.

Y1 Division

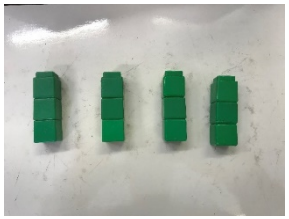
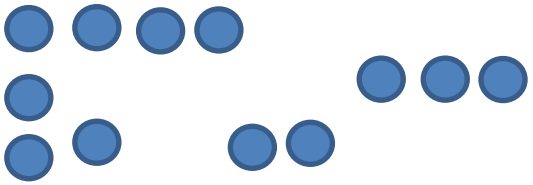
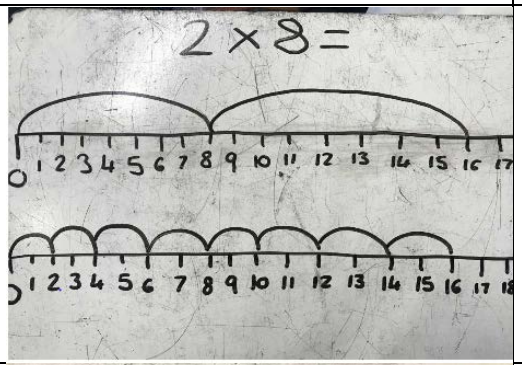
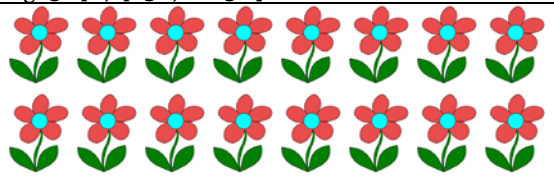
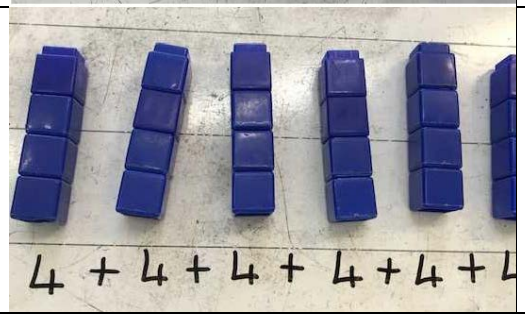
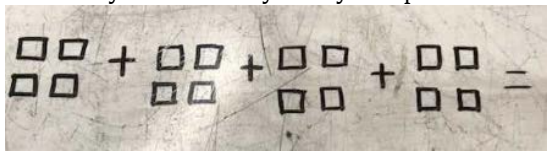
Objective & Strategy	Concrete	Pictorial	Abstract
Division as sharing	I have 10 cubes; can you share them equally in 2 groups? 	Children use pictures or shapes to share quantities  8 shared between 2 is 4. 	12 shared between 3 is 4

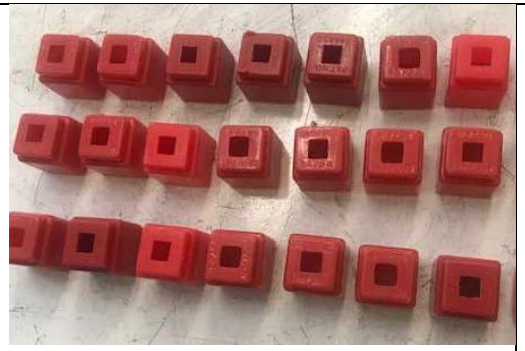
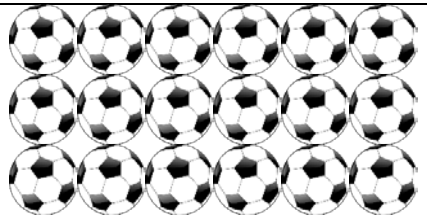
Year 2 Division

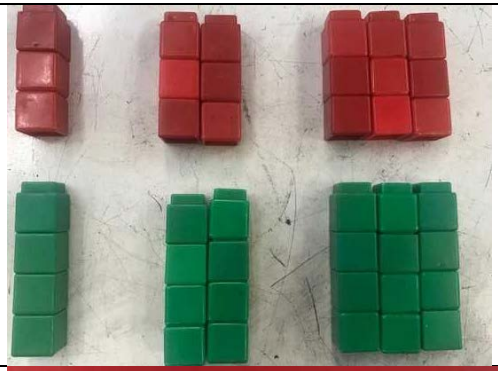
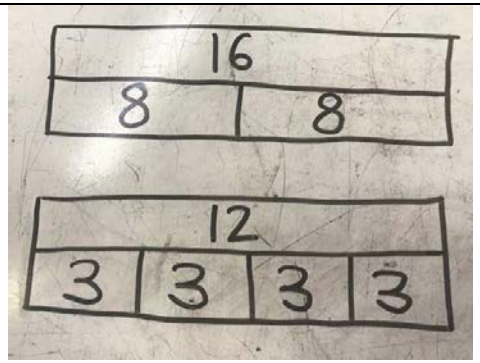
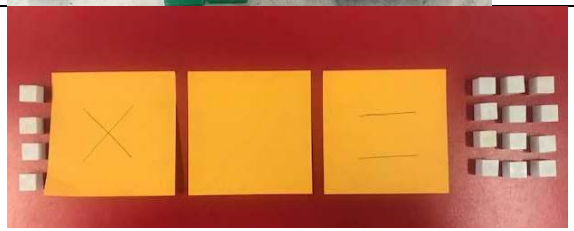
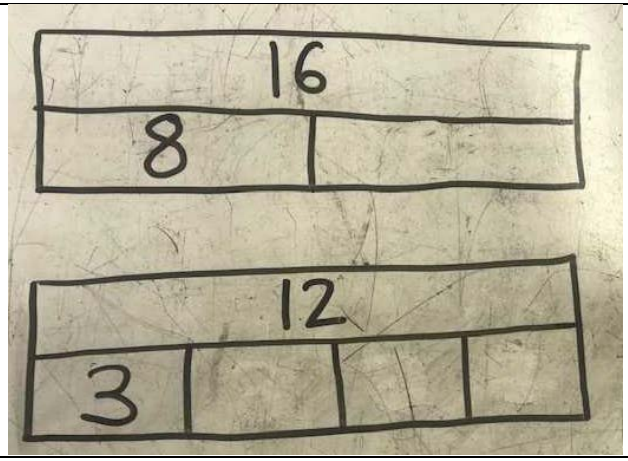
Division as sharing	 I have 10 cubes. can you share them equally in 2 groups?	Children use pictures or shapes to share quantities  15 shared between 3 is 5.	12 shared between 3 is 4
Division as grouping	Divide quantities into equal groups. Use cubes, counters, objects or place value counters to aid understanding. 	 Use number lines for grouping	28 ÷ 7 = 4 Divide 28 into 7 groups. How many are in each group?

		 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.	

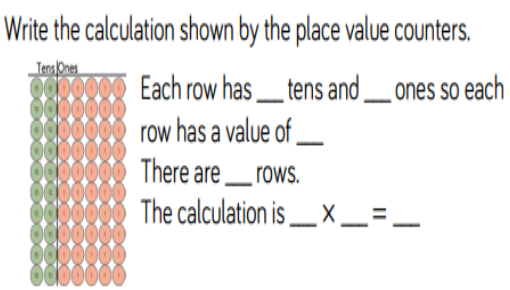
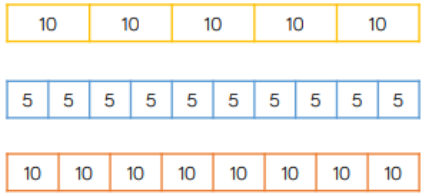
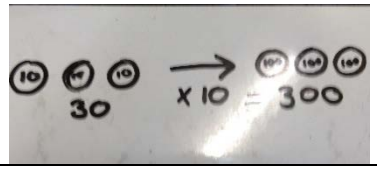
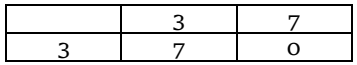
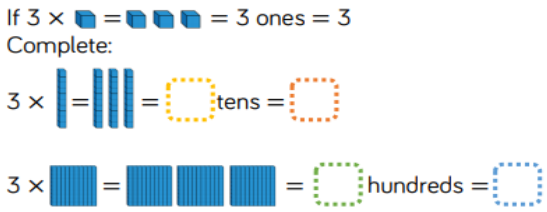
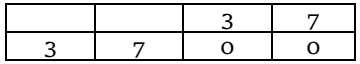
Year 3 Multiplication and division

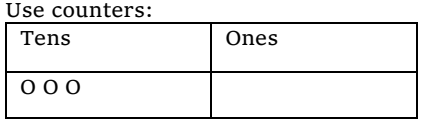
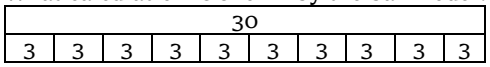
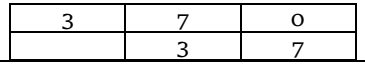
Objective & Strategy	Concrete	Pictorial	Abstract
Recall and use multiplication and division facts for the 3,4 and 8 multiplication tables.		 How many altogether? What would the calculation be? How many different calculations can you think of? e.g. 3x4=, 4x3=, 12=3x4 etc	3 x 4 = 4 x 3 = 12 = 3 x 4 12 = 4 x 3 12 ÷ 3 = 4 12 ÷ 4 = 3 Mary has 3 friends. She has 12 sweets in total. If she shares them equally how many sweets will each child have?
Calculate mathematical statements for multiplication and division within the multiplication t ables and write them using the multiplication (x), division (÷) and equals (=) signs.		 What could the calculation be?	2 multiplied by 8 is equal to? How many eyes do 8 people have altogether? 2 x __ = 16 16 ÷ __ = 2
Solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods and multiplication and division facts, including problems in context.		What would the addition calculation look like? Can you write this as a multiplication problem? How many different ways can you represent this? 	4+4+4+4 = 4 x 4 = 4 squared = A bar of chocolate is in the shape of a square? If there are 4 columns how many pieces of chocolate are there altogether? What would the next square bar look like? E.g. 5 x 5 =

Show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot.		 __ x __ = __ x __ = __ = __ x __ __ = __ x __ __ ÷ __ = __ ÷ __ =	True or false? Anything multiplied by 6 will equal an even number?

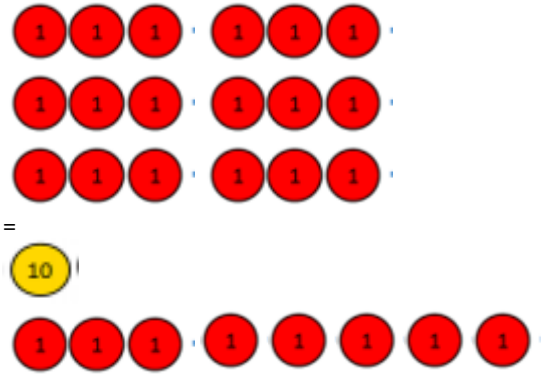
Objective & Strategy	**Concrete**	**Pictorial**	**Abstract**
Recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables.			Complete the 3, 4 and 8 times tables. What do we notice? Are there any numerals that can be divided by 3,4 and 8? How can we check?
Solve problems including missing number problems involving multiplication and division, positive integer scaling problems and correspondence problems in which n objects are connected to m objectives.			5 x __ = 15 __ x 4 = 32 48 __ 6 = 8 4 x 3 = 6 x ___ 24 ÷ 6 = 12 x ___

Year 4 Multiplication and Division.

Objective and Strategy.	Concrete	Pictorial	Abstract
Multiplying by 10	Place value counters 	Match the statements to the bar models:  	Place value grid; digits move one column to the left;  37 x 10 =370`
Multiplying by 100	Place value counters  Money  Use Diennes apparatus: 	As above but by 100	Place value grid; digits move two columns to the left;  37 x 100 =3700

Dividing by 10	Use counters: 	What calculation is shown by the bar model?  Draw a bar model to represent	Place value grid; digits move one column to the right; 

<table>
<tr>
<td></td>
<td>
<table>
<tr><td></td><td>O O O</td></tr>
</table>
</td>
<td>60 ÷ 10</td>
<td>370 ÷ 10 =37</td>
</tr>
<tr>
<td>Divide by 100</td>
<td>
<table>
<tr><th>Hundreds</th><th>Tens</th><th>Ones</th></tr>
<tr><td>O O O</td><td>O O</td><td></td></tr>
<tr><td></td><td>O O O</td><td>O O</td></tr>
</table>
</td>
<td></td>
<td>Place value grid; digits move two columns to the left;
<table>
<tr><td>3</td><td>7</td><td>0</td><td>0</td></tr>
<tr><td></td><td></td><td>3</td><td>7</td></tr>
</table>

3700 ÷ 100 =37</td>
</tr>
<tr>
<td>Multiply two single digit numbers</td>
<td>3 x 6
 
=
</td>
<td> 
How many legs are there on four spiders?
__ + __ + __ + __ = __ × __ = __
There are __ legs on each spider.

If there are __ spiders, there will be __ legs altogether.

Array
4 x 6 = 24
6 x 4 =24
O O O O O O
O O O O O O
O O O O O O
O O O O O O

Number lines

Bar models 4 x 6
<table>
<tr><td colspan="6">24</td></tr>
<tr><td>4</td><td>4</td><td>4</td><td>4</td><td>4</td><td>4</td></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td></td></tr>
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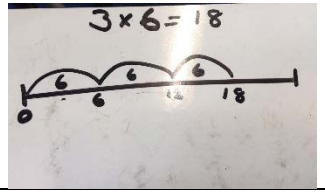
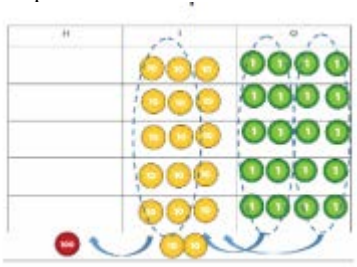
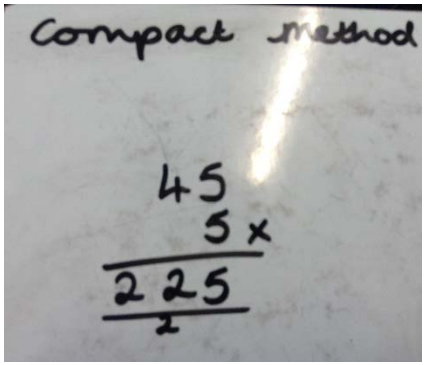
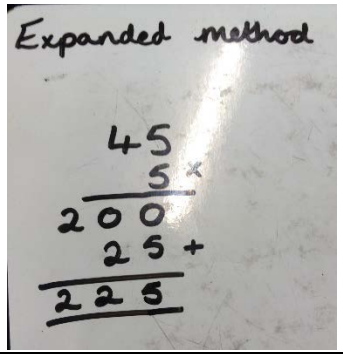
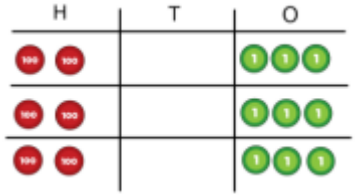

</td>
<td>Horizontal recording of multiplication facts
4 x 3 =12
7 x 8 =56
_ = 4 x 5
6 x _ = 30
Multiplication grid
<table>
<tr><th>X</th><th>3</th><th>4</th><th>7</th><th>9</th></tr>
<tr><td>2</td><td>6</td><td>8</td><td>14</td><td>18</td></tr>
<tr><td>5</td><td>15</td><td>20</td><td>35</td><td>45</td></tr>
<tr><td>8</td><td>24</td><td>32</td><td>56</td><td>72</td></tr>
<tr><td>6</td><td>18</td><td>24</td><td>42</td><td>54</td></tr>
</table></td>
</tr>
</table>

<table>
<tr>
<td>Multiply a two-digit number by a one-digit number</td>
<td>Using Diennes apparatus:

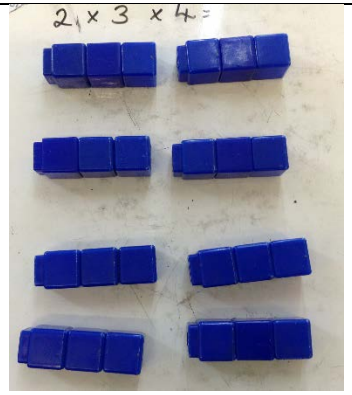
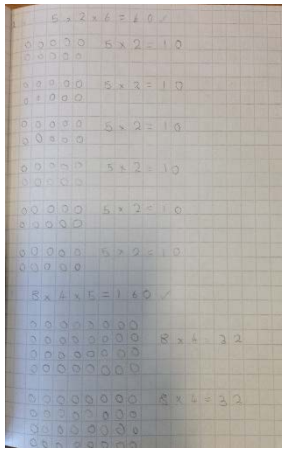
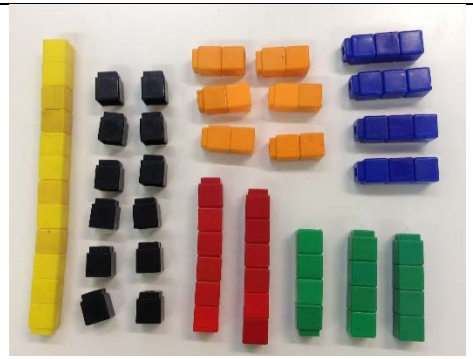
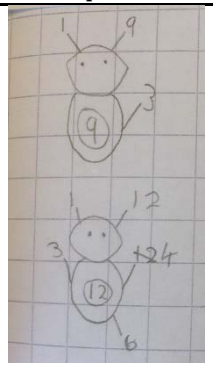
21 x 3
<table><tr><th>Tens</th><th>Ones</th><th>Product</th></tr><tr><td></td><td></td><td></td></tr></table>
Use place value counters
 
34 x 5 = 170</td>
<td>Bar model 21 x 3
<table><tr><td colspan="2">21</td><td colspan="2">21</td><td colspan="2">21</td></tr><tr><td>20</td><td>20</td><td>20</td><td>1</td><td>1</td><td>1</td></tr><tr><td colspan="6">60 + 1 = 61</td></tr></table>
Part whole method

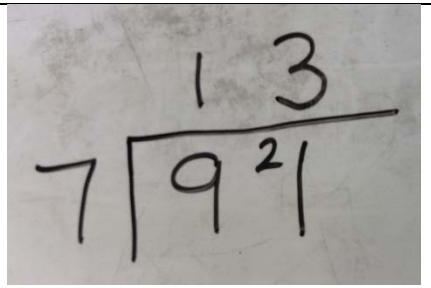
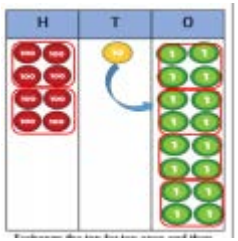
24 x 3
(20 + 4) x 3
60 + 12 = 72</td>
<td>Written method, expanded method
 

 
</td>
</tr>
<tr>
<td>Multiply a three-digit number by a one-digit number</td>
<td>Using place value counters;
203 x 3
 

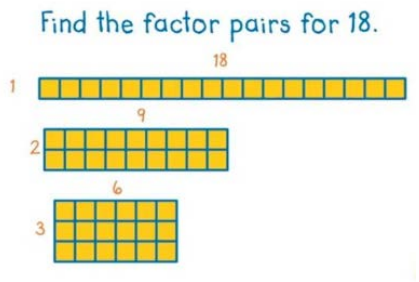
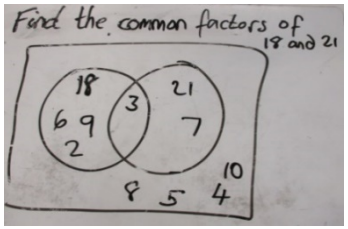
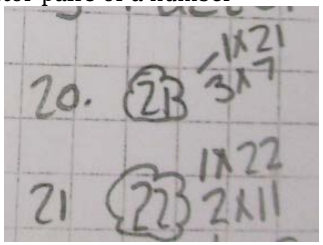
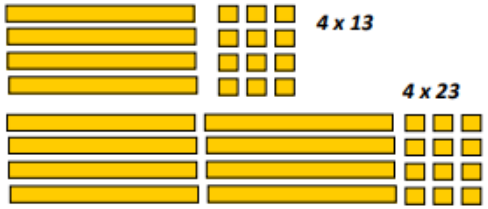
600 + 9 =609</td>
<td>Bar Model: 342 x 3
<table><tr><td colspan="3">342</td><td colspan="3">342</td><td colspan="3">342</td><td colspan="3">342</td></tr><tr><td>300</td><td>300</td><td>300</td><td>40</td><td>40</td><td>40</td><td>2</td><td>2</td><td>2</td></tr><tr><td colspan="9">900 + 120 + 6 =1026</td></tr></table>
Part whole method
342 x 3
(300 + 40+ 2) x 3
900 + 120 + 6 =1026</td>
<td>Written method expanded method

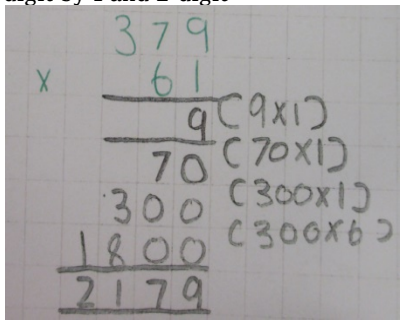
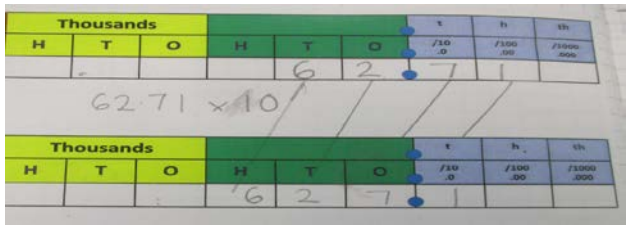
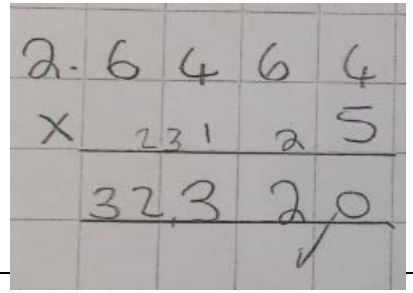
As above but using three digit numbers</td>
</tr>
</table>

<table>
<tr>
<td>Multiply three single digit numbers</td>
<td> 
</td>
<td>Arrays
 
Bar Model
<table>
<tr><td colspan="4">2 x 3 x 4</td></tr>
<tr><td>2 x 3</td><td>2 x 3</td><td>2 x 3</td><td>2 x 3</td></tr>
<tr><td>6</td><td>6</td><td>6</td><td>6</td></tr>
<tr><td colspan="4">24</td></tr>
</table></td>
<td>2 x 3 x 4
(2 x 3) x 4
6 x 4 = 24
Or
2 x (3 X 4)
2 X 12 =24</td>
</tr>
<tr>
<td>Factor pairs</td>
<td>  </td>
<td>  </td>
<td>
<table>
<tr><td>12</td><td>1 x 12
12 x 1
2 x 6
6 x 2
3 x 4
4 x 3</td></tr>
</table>
3 x 4 = 12
4 x 3 – 12
12 ÷ 3 = 4
12 ÷ 4 = 3
12 = 3 x 4
12 = 4 x 3
3 = 12 ÷ 4
4 = 12 ÷ 3</td>
</tr>
<tr>
<td>Dividing with a remainder</td>
<td>10 ÷ 3 = 3r1</td>
<td>
<table>
<tr><td colspan="4">10</td></tr>
<tr><td>3</td><td>3</td><td>3</td><td>1</td></tr>
</table></td>
<td></td>
</tr>
<tr>
<td>Dividing 2 digits by 1 digit</td>
<td>Place Value Counters</td>
<td>
<table>
<tr><td colspan="7">91</td></tr>
<tr><td>13</td><td>13</td><td>13</td><td>13</td><td>13</td><td>13</td><td>13</td></tr>
</table></td>
<td>Formal short division with two digits</td>
</tr>
</table>

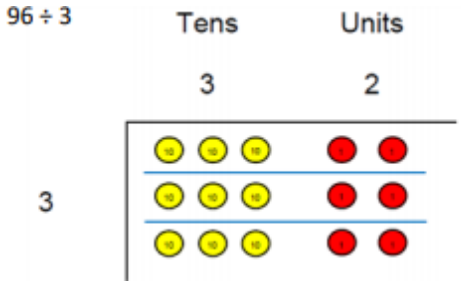
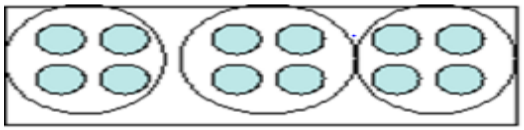
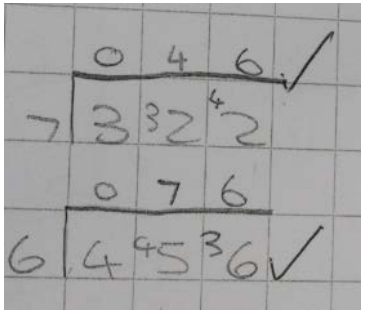
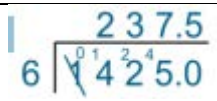
		91 ÷13 = 7 91 ÷ 7 = 13 7 = 91 ÷ 13 13 = 91 ÷ 7 91 ÷ 7 (70 + 21) ÷ 7 10 + 3 =13	
Dividing 3 digits by 1 digit	Place value counters 	252 ÷ 6 42 42 42 42 42 42 252 ÷ 6 =42 252 ÷ 42 = 6 42 = 252 ÷ 6 6 = 252 ÷ 42	Formal short division with three digits As above with 3 digits

Y5 Multiplication

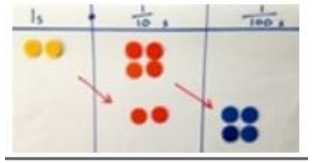
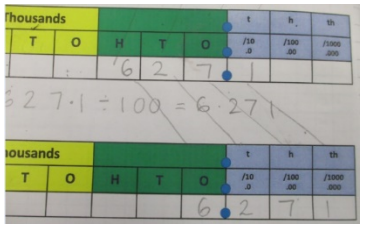
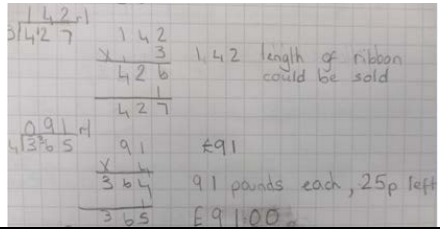
<table>
<tr><th>Objective & Strategy</th><th>Concrete</th><th>Pictorial</th><th>Abstract</th></tr>
<tr><td>Identify multiples and factors, including all factor pairs of a number.</td><td> 
</td><td>Venn Diagrams / Carroll Diagrams to identify common factors of two or more numbers.
 
</td><td>e.g. Identification of common factors / factor pairs of a number
  </td></tr>
<tr><td>Multiply numbers up to 4 digits by a one or two digit number using a formal written method, including long multiplication for two digit numbers</td><td> 

To continue to use Base 10, Dienes and Numicon where appropriate</td><td>Using Grids for partitioning and multiplication facts
<table>
<tr><td>x</td><td>300</td><td>20</td><td>7</td></tr>
<tr><td>4</td><td>1200</td><td>80</td><td>28</td></tr>
</table>
Continue to use bar modelling to support problem solving</td><td>To use formal written method for 4-digit by 1 and 2-digit
 
</td></tr>
<tr><td>Multiply numbers (including decimals) by 10, 100 and 1000.</td><td></td><td>To use grids with column headings
(e.g. Th, H, T U . t h) and model moving columns to the LEFT as appropriate.
 
</td><td> 
</td></tr>
<tr><td colspan="4">Know and use the vocabulary of prime numbers, prime factors and composite (non-prime) numbers.
Recall prime numbers up to 100
To continue to draw division and multiplication facts rapidly (continuation fron Year 4)
To solve problems involving multiplication and division, including scaling by simple fractions and problems involving simple rates (e.g. converting measures).</td></tr>
</table>

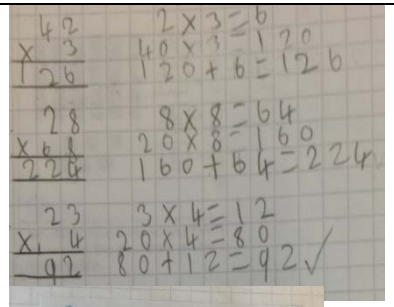
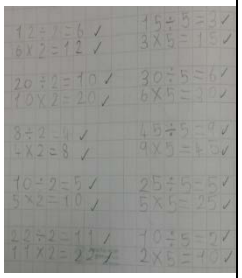
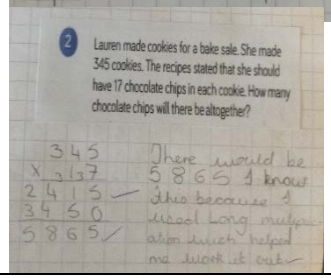
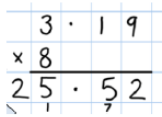
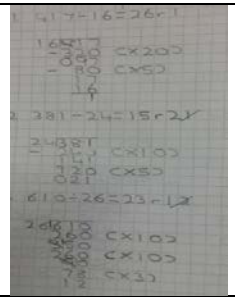
Y5 Division

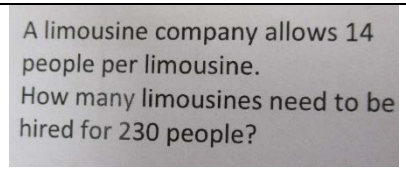
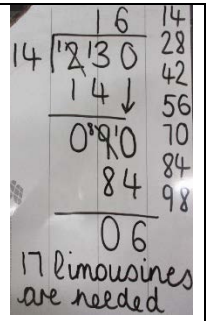
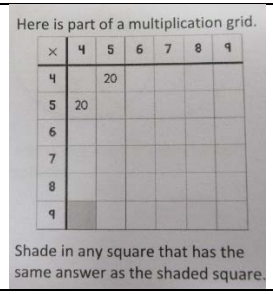
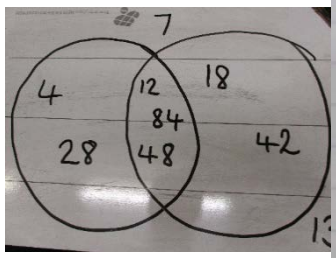
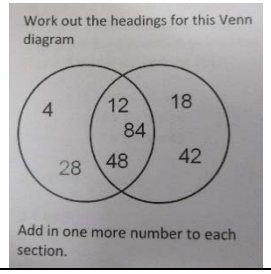
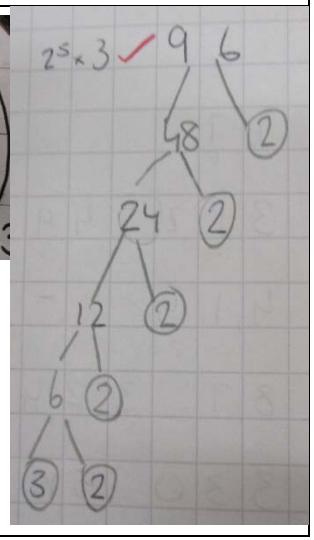
<table>
<tr><th>Objective & Strategy</th><th>Concrete</th><th>Pictorial</th><th>Abstract</th></tr>
<tr><td>Divide numbers up to 4 digits by a one digit number using the formal written method</td><td>For concrete, use of Place Value or similar manipulatives as appropriate
  </td><td>Students can continue 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.</td><td>Divide numbers up to 4 digits by a one digit number using ‘bus stop’ method
  </td></tr>
<tr><td>Interpret remainders appropriately for the context.</td><td>Use of place value counters as above using the formal method for short division and showing extra counters as remainders.</td><td>As above, if required, highlighting incomplete leaps as remainders.</td><td> 
What could I do with the remaining 3? How could I share this between 6 as well?

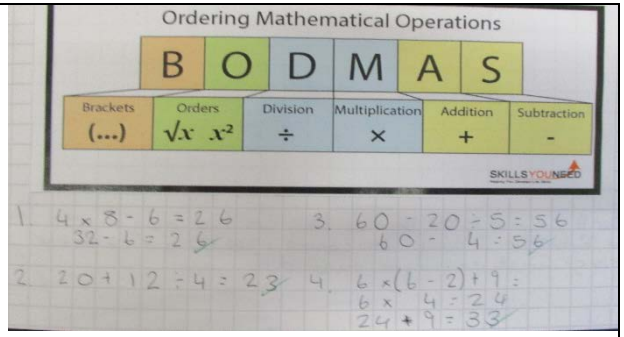
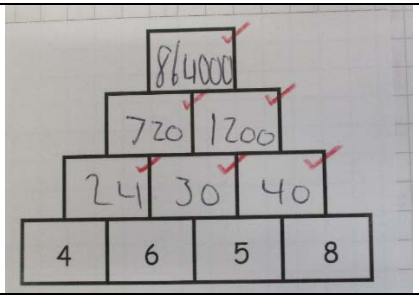
To use remainders in context – rounding up and down as appropriate.</td></tr>
<tr><td>Divide numbers (including decimals) by 10, 100 and 1000</td><td>To continue to use Base 10, Dienes and Numicon where appropriate

If I know 4 x 6 then 0.4 x 6 is ten times smaller.
  </td><td>To use grids with column headings
(e.g. Th, H, T U . t h) and model moving columns to the RIGHT as appropriate.
  </td><td>  </td></tr>
<tr><td colspan="4">Know and use the vocabulary of prime numbers, prime factors and composite (non-prime) numbers.
Recall prime numbers up to 100
To continue to draw division and multiplication facts rapidly (continuation fron Year 4)
To solve problems involving multiplication and division, including scaling by simple fractions and problems involving simple rates (e.g. converting measures).</td></tr>
</table>

Year 6 Multiplication/Division

Objective & Strategy	Concrete	Pictorial	Abstract
Multiply multi-digit number up to 4 digits by a 2-digit number using the formal method of long multiplication. *Use of inverse operations as a tool for checking answers.	As in previous years, children will use concrete and pictorial methods in order to close the gap. Resources may include: Numicon Base 10/Deans Multi-link Counters		  
Short multiplication involving decimals			
Divide numbers up to 4 digits by a 2 digit number using the formal written method.			

Divide numbers up to 4 digits by a 2-digit whole number using the formal written method of long division and interpret remainders as whole number remainders, fractions or by rounding as appropriate for the context.			 
Perform mental calculations, including with mixed operations and large numbers.			
Identify common factors, common multiples and prime numbers.			  

Use their knowledge of the order of operations to carry out calculations involving the four operations.			
Solve problems involving addition, subtraction, multiplication and division.			
Times Tables – Derive and recall quickly all multiplication facts up to 12 x 12.			Use and apply multiplication and division facts up to 12 x 12 with a good degree of fluency as known facts.