Calculation Policy for Grace Mary Primary School

This policy has been designed to teach children through the use of concrete, pictorial and abstract methods. This calculation policy should be used to support children to develop a deep understanding of number and calculation.

Background

This policy has been developed by the Maths Coordinator with a specific interest in the use of Singapore methods to develop number awareness and fluency. The policy only details the strategies; teachers must plan opportunities for pupils to apply these; for example, when solving problems, or where opportunities emerge elsewhere in the curriculum.

Using the concrete-pictorial-abstract approach:

Children develop an understanding of a mathematical concept through the three steps (or representation) of concrete-pictorial-abstract approach. Reinforcement is achieved by going back and forth between these representations.

Concrete representation:

A pupil is first introduced to an idea or a skill by acting it out with real objects. This is a 'hands on' component using real objects and it is the foundation for conceptual understanding.

Pictorial representation:

A pupil has sufficiently understood the hands-on experiences performed and can now relate them to representations, such as a diagram or picture of the problem.

Abstract representation

The symbolic stage - a pupil is now capable of representing problems by using mathematical notation, for example: $12 \div 2 = 6$

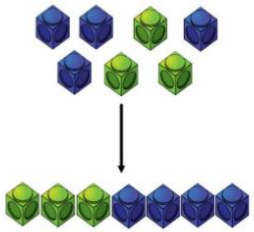
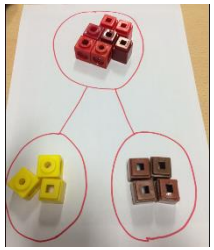
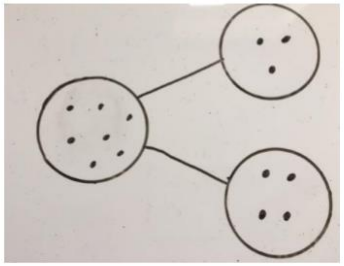
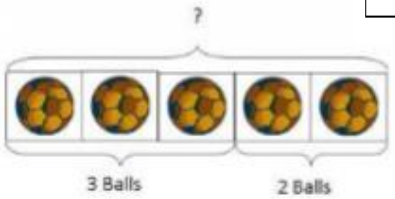
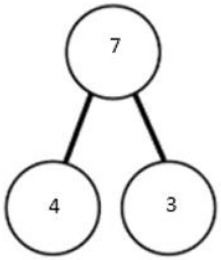
Guidance

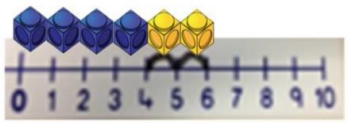
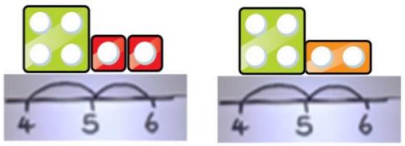
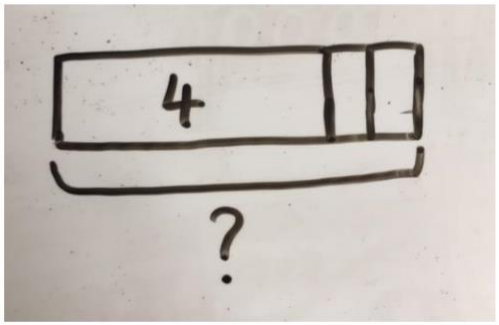
This is document provides guidance and examples for key objectives for each year group but is not to be followed as a complete planning aid as not all objectives are exemplified.

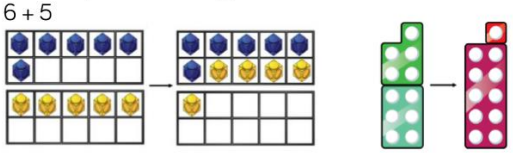
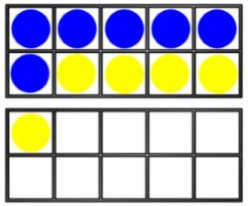
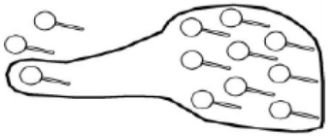
Calculation policy: Addition

Key language: sum, total, parts and wholes, plus, add, altogether, more, 'is equal to' 'is the same as'.

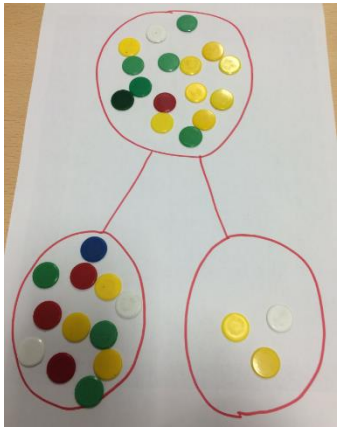
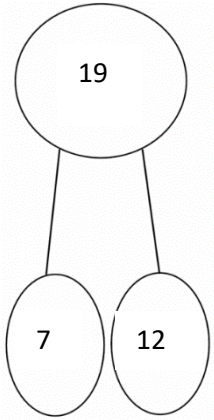
Reception

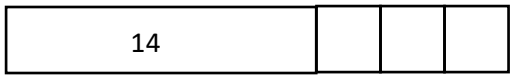
Objective and strategies	Concrete	Pictorial	Abstract
Combining two parts to make a whole	**Combining two parts to make a whole** (use other resources too e.g. eggs, shells, teddy bears, cars).   Concrete representation of the part-whole model	Children to represent the cubes using dots or crosses. They could put each part on a part whole model too.  Use pictures to add two numbers together as a group or in a bar. 	$4 + 3 = 7$ Four is a part, 3 is a part and the whole is seven. 

Starting at a bigger number and counting on	   Concrete representation for 4 + 2 =  Start with the larger number on the bead string and then count on to the smaller number 1 by 1 to find the answer.	A bar model which encourages the children to count on, rather than count all. 	The abstract number line: What is 2 more than 4? What is the sum of 2 and 4? What is the total of 4 and 2? 4 + 2 

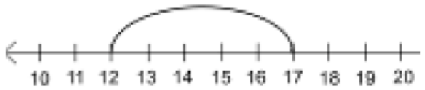
Regrouping to make 10	**Regrouping to make 10;** using ten frames and counters/cubes or using Numicon. 6 + 5 	Children to draw the ten frame and counters/cubes.   3 + 9 = Use pictures or a number line. Regroup or partition the smaller number to make 10.	7 + 4= 11 If I am at seven, how many more do I need to make 10. How many more do I add on now?

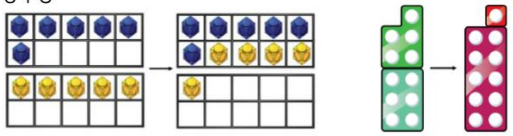
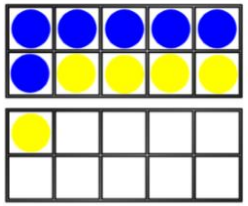
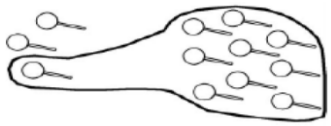
Year 1- Consolidate CPA approach from Reception but extend to addition facts to 20

Objective and strategies	Concrete	Pictorial	Abstract
Combining two parts to make a whole	**Combining two parts to make a whole** (use other resources too e.g. eggs, shells, teddy bears, cars).   5 + 12 = Children combine and then count  Part whole model for 12 + 3 = 15	Bar model for 12 + 4 = 	

<table>
<tr>
<td>Starting at a bigger number and counting on</td>
<td> 
14 + 3 = 17
Children start with 14 in the egg trays and then add 3 more.</td>
<td> 

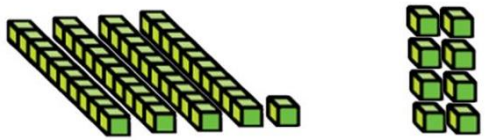
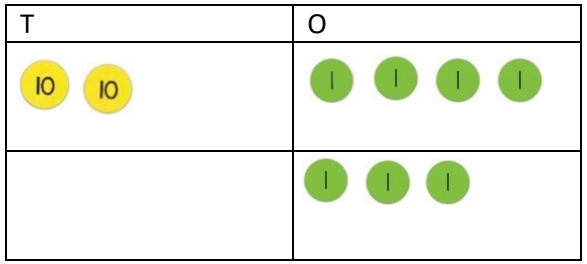
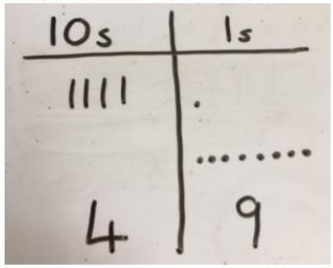
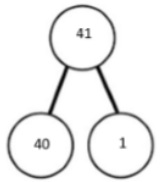
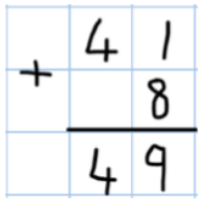
14 + 3 =

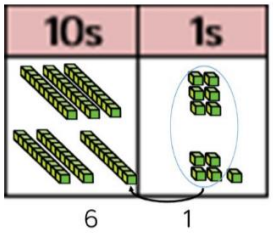
A bar model which encourages the children to count on, not all.</td>
<td>12 + 5 = 17
 

Start at the larger number on the number line and count on in ones or in one jump to find the answer.</td>
</tr>
<tr>
<td>Regrouping to make 10</td>
<td>Regrouping to make 10; using ten frames and counters/cubes or using Numicon.
6 + 5
  </td>
<td>Children to draw the ten frame and counters/cubes.
 
 
3 + 9 =
Use pictures or a number line.
Regroup or partition the smaller number to make 10.</td>
<td>7 + 4= 11

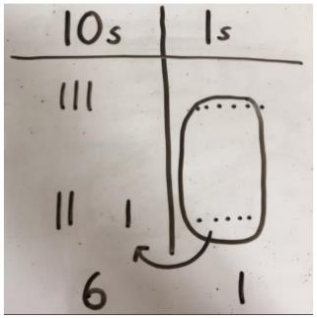
If I am at seven, how many more do I need to make 10. How many more do I add on now?</td>
</tr>
</table>

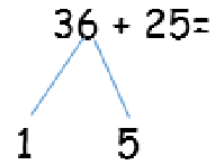
Year 2

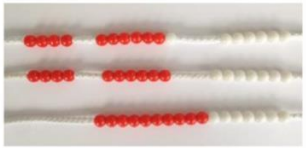
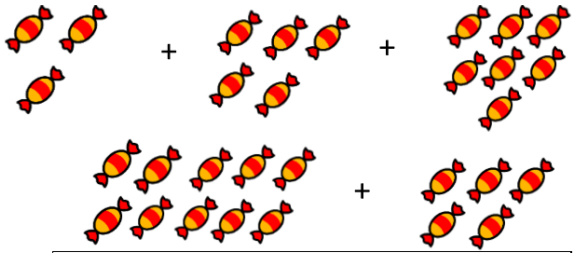
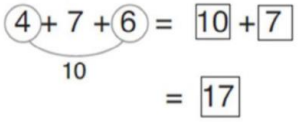
Objective and strategies	Concrete	Pictorial	Abstract
TO + O	**TO + O using base 10**. Continue to develop understanding of partitioning and place value. 41 + 8  Use base 10 blocks before moving onto place value counters 24 + 3 = 	Children to represent the base 10 e.g. lines for tens and dot/crosses for ones. 	41 + 8  1 + 8 = 9 40 + 9 = 49 

<table>
<tr>
<td>TO + TO</td>
<td>
TO + TO using base 10. Continue to develop understanding of partitioning and place value.
36 + 25


24 + 43 =
<table>
<tr><td>T</td><td>O</td></tr>
<tr><td>10 10</td><td>| | | |</td></tr>
<tr><td>10 10 10 10</td><td>| | |</td></tr>
</table>

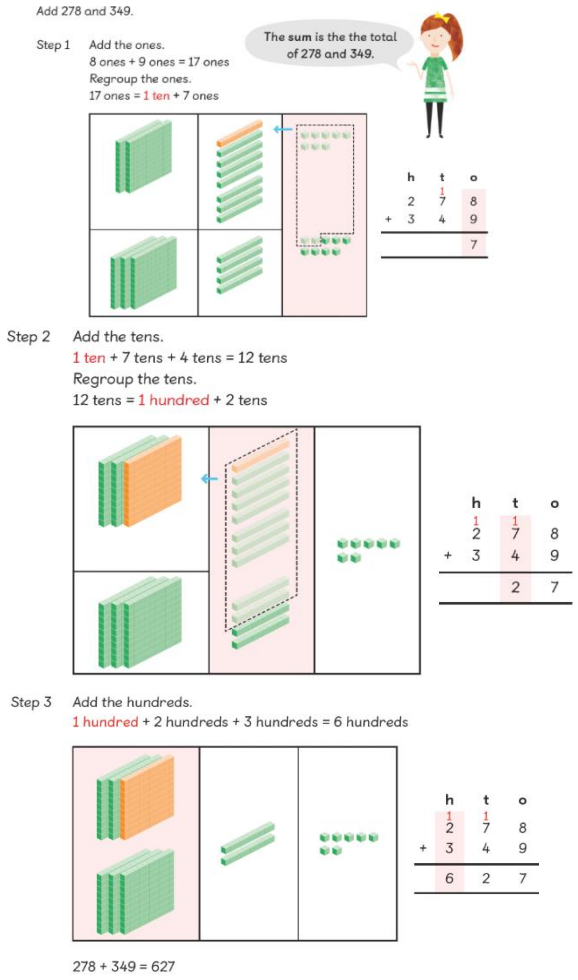
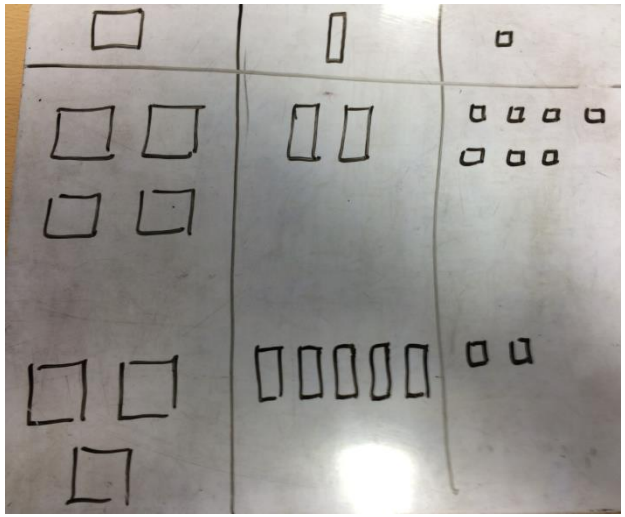
When regrouping, children need to be taught that ten ones is the same as one ten.
</td>
<td>
Chidlren to represent the base 10 in a place value chart.


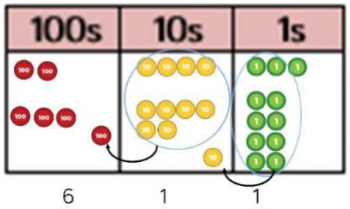
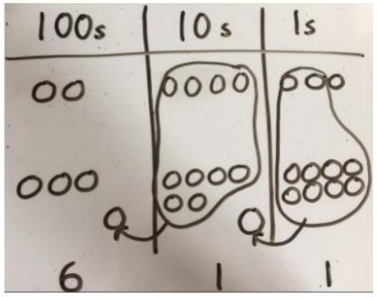
</td>
<td>
Looking for ways to make 10.


30 + 20 = 50
5 + 5 = 10
50 + 10 + 1 = 61
Formal method:
36
+25
61
1
</td>
</tr>
<tr>
<td>Adding three single digits</td>
<td>
4 + 7 + 6= 17
Put 4 and 6 together to make 10. Add on 7.

Following on from making 10, make 10 with 2 of the digits (if possible) then add on the third digit.
</td>
<td>

Add together three groups of objects. Draw a picture to recombine the groups to make 10.
</td>
<td>


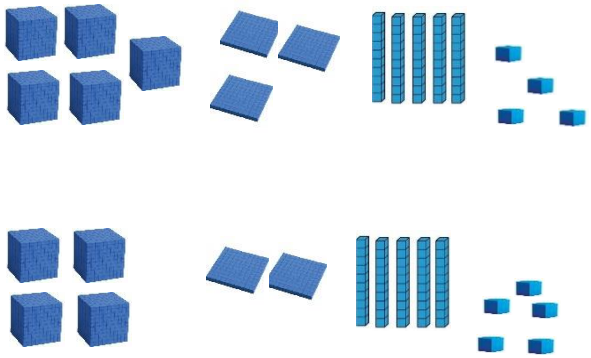
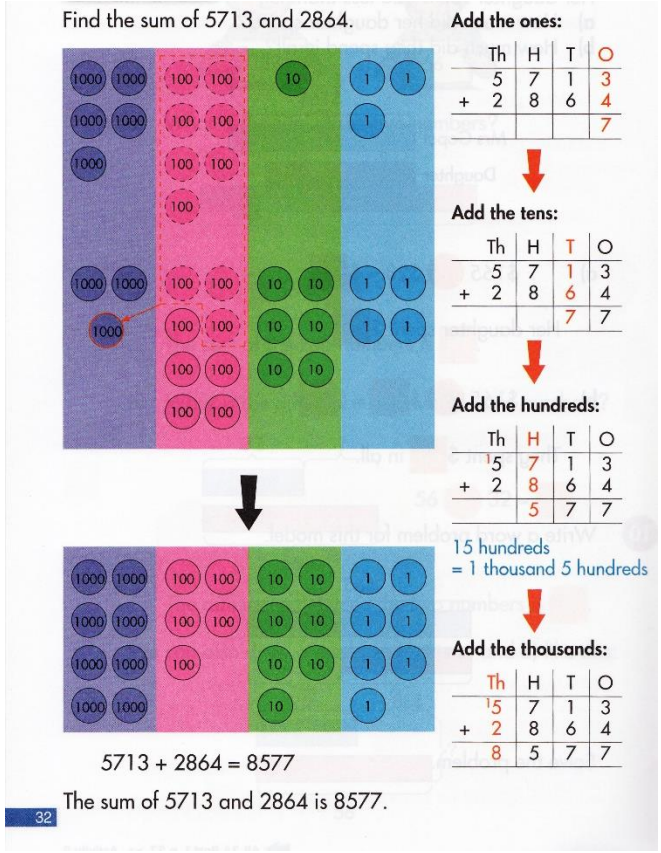
Combine the two numbers that make 10 and then add on the remainder.
</td>
</tr>
</table>

Year 3

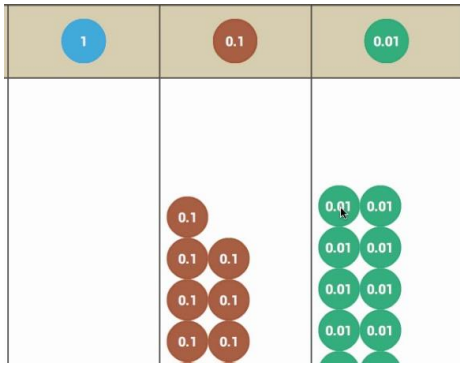
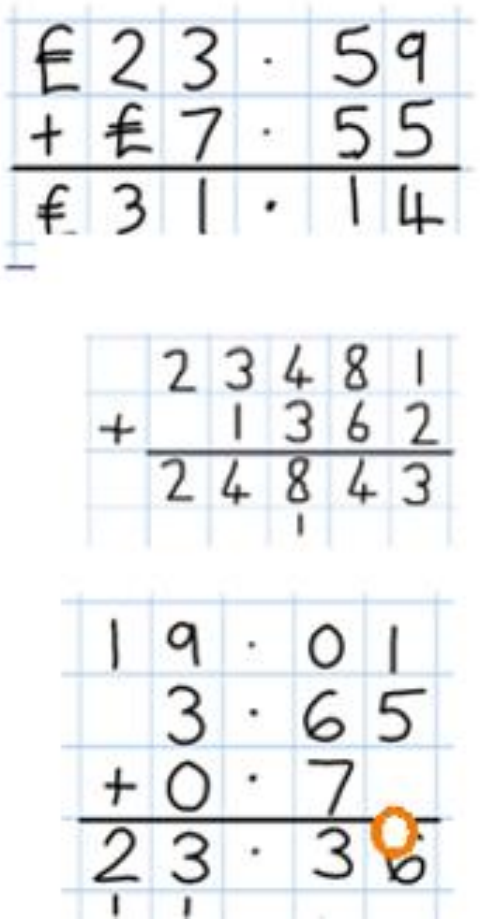
Objective and strategies	Concrete	Pictorial	Abstract
Add two three digit numbers		**Children draw their own representation of the addition using hundred, tens and ones blocks.** 	243 +368 611 1 1

	Use of place value counters to add HTO + TO, HTO + HTO etc. When there are 10 ones in the 1s column- we exchange for 1 ten, when there are 10 tens in the 10s column- we exchange for 1 hundred.  	Chidren to represent the counters in a place value chart, circling when they make an exchange.  	

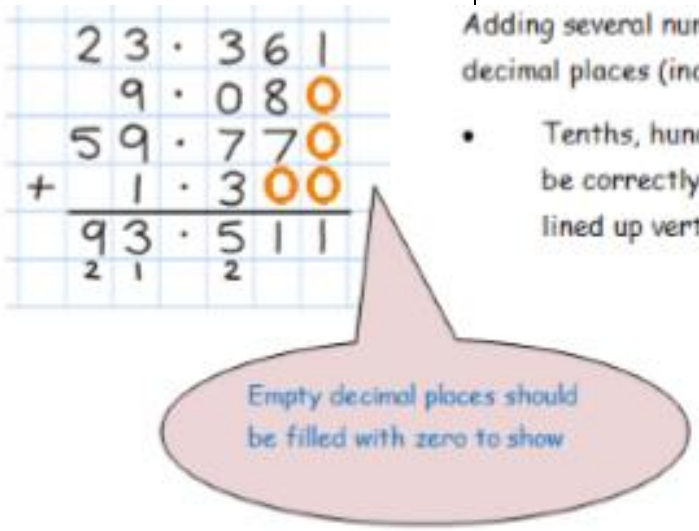
Year 4

Objective and strategies	Concrete	Pictorial	Abstract
Add two four digit numbers	 **Use of base 10 apparatus to add. Children need to be taught to exchange e.g. ten 10s = one 100.**		$$\begin{array}{r} {\scriptstyle 1\,1} \\ 4365 \\ +\ 5146 \\ \hline 9511 \end{array}$$

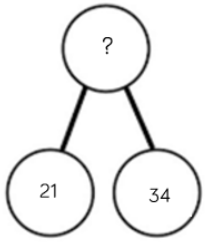
Year 5

Objective and strategies	Concrete	Pictorial	Abstract
Adding numbers with more than four digits including decimals.		**Use of place value discs to support with understanding**  **The above diagram shows the number 0.78.**	

Year 6

Objective and strategies	Concrete	Pictorial	Abstract
Adding several numbers with up to three decimal places		Adding several numbers with different numbers of decimal places (including money and measures): • Tenths, hundredths and thousandths should be correctly aligned, with the decimal point lined up vertically including in the answer row.	

Conceptual variation; different ways to ask children to solve 21 + 34



?	
21	34

Word problems:
In year 3, there are 21 children and in year 4, there are 34 children.
How many children in total?

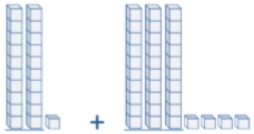
21 + 34 = 55. Prove it

21
+34
___

21 + 34 =

☐ = 21 + 34

Calculate the sum of twenty-one and thirty-four.



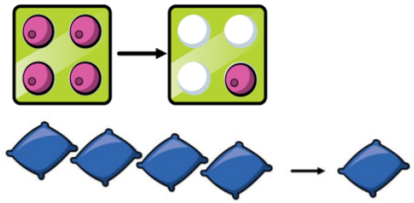
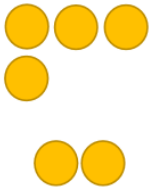
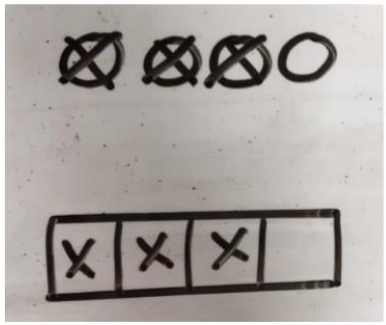
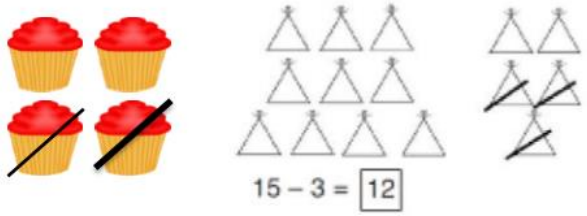
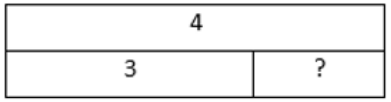
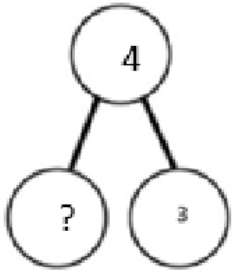
Missing digit problems:

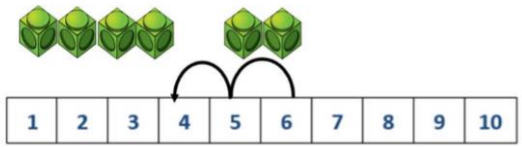
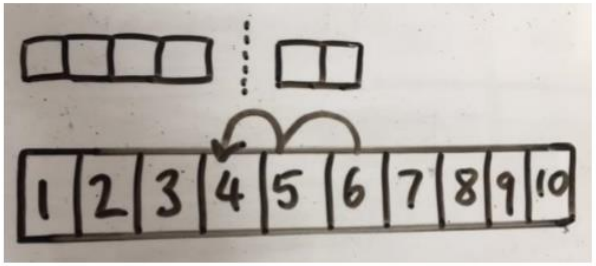
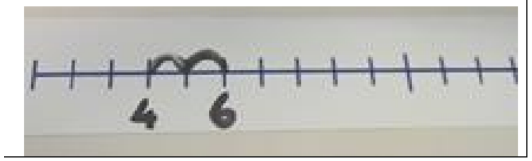
10s	1s
10 10	1
10 10 10	?
?	5

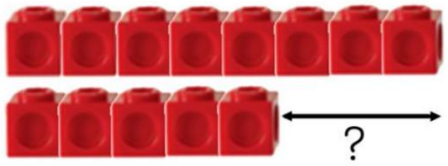
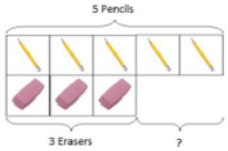
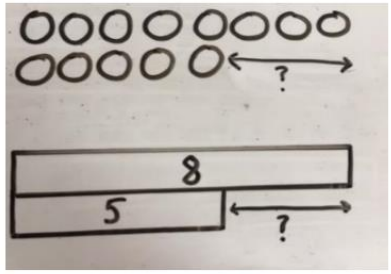
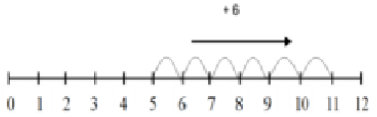
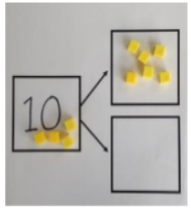
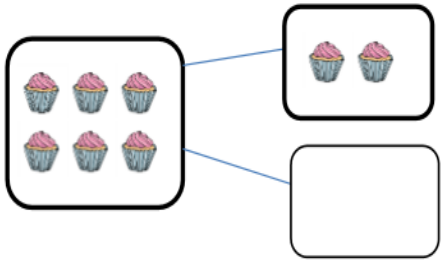
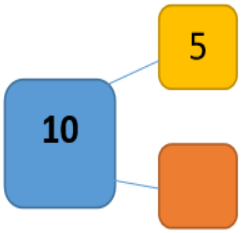
Calculation policy: Subtraction

Key language: take away, less than, the difference, subtract, minus, fewer, decrease.

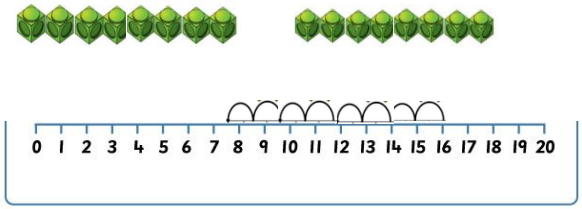
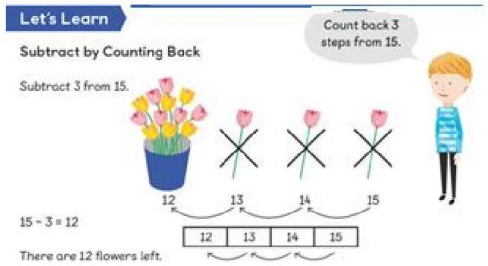
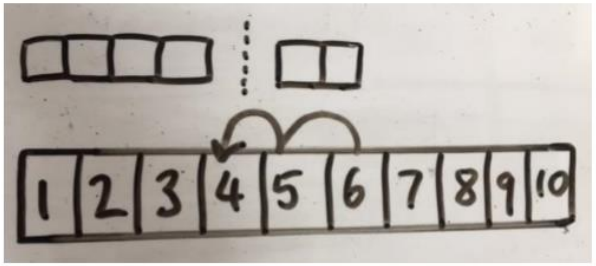
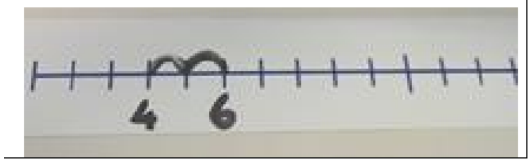
Reception

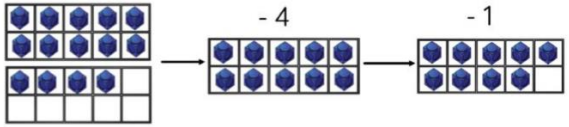
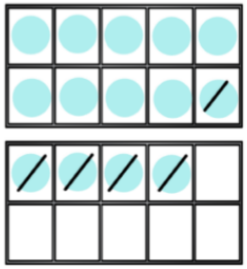
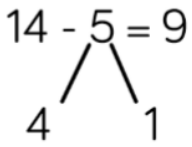
Objective and strategies	Concrete	Pictorial	Abstract
Taking away ones	Physically taking away and removing objects from a whole (ten frames, Numicon, cubes and other items such as beanbags could be used). 4 – 3 = 1  Use physical objects, counters, cubes etc to show how objects can be taken away.  **6 – 2 = 4**	Children to draw the concrete resources they are using and cross out the correct amount. The bar model can also be used.  Cross out drawn objects to show what has been taken away.  15 – 3 = 12	4- 3 = □ = 4 – 3  

Counting back	**Counting back** (using number lines or number tracks) children start with 6 and count back 2. 6 – 2 = 4  Use counters and move them away from the group as you take them away counting backwards as you go. 	Children to represent what they see pictorially e.g.  	Children to represent the calculation on a number line or number track and show their jumps. Encourage children to use an empty number line   Put 8 in your head, count back 4. What number are you at?.

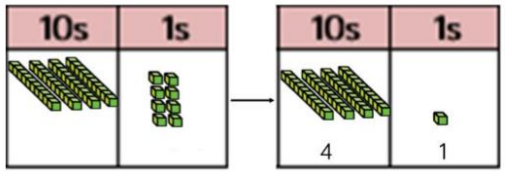
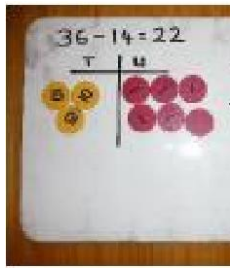
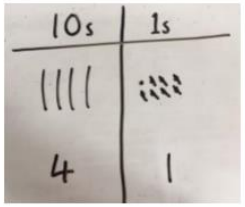
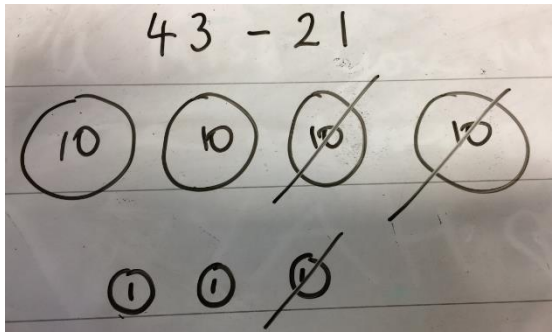
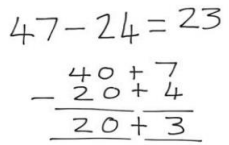
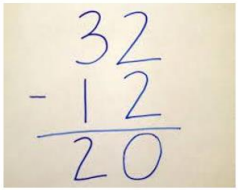
Finding the difference	**Finding the difference** (using cubes, Numicon or Cuisenaire rods, other objects can also be used). Calculate the difference between 8 and 5.   Use basic bar models with items to find the difference.	Children to draw the cubes/other concrete objects which they have used or use 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.  Count on to find the difference.
Part Part Whole	 Link to addition- use the part whole model to help explain the inverse between addition and subtraction. If 10 is the whole and 6 is one of the parts. What is the other part? **10 - 6 =**	Use a pictorial representation of objects to show the part part whole model. 	 Move to using numbers within the part whole model.

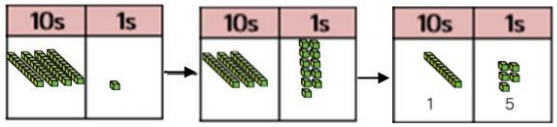
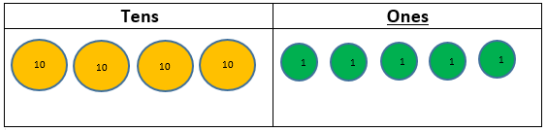
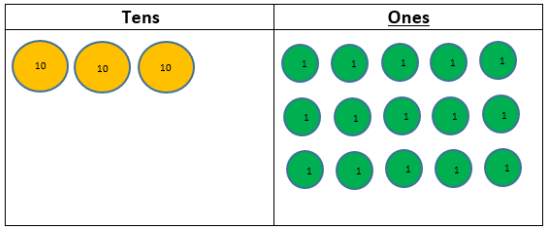
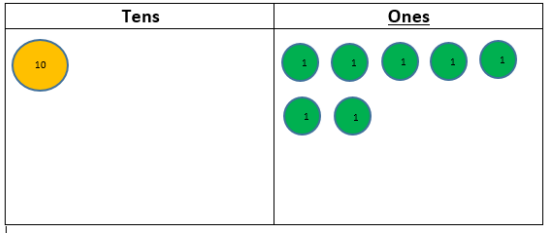
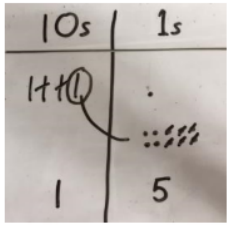
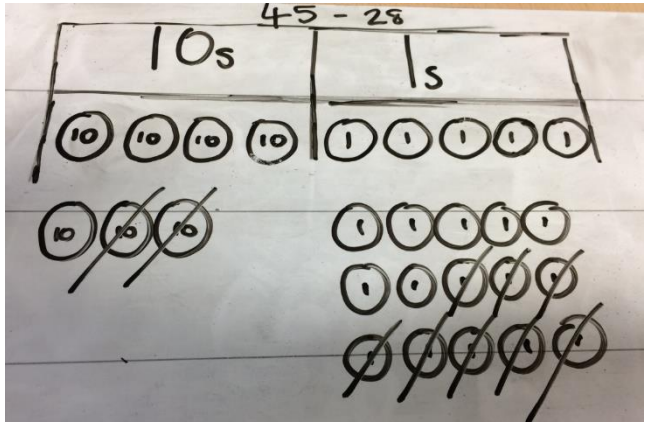
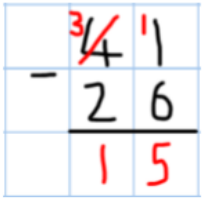
Year 1- Consolidate CPA approach from Reception but extend to subtraction facts

Objective and strategies	Concrete	Pictorial	Abstract
Counting back	**Counting back**- (using number lines or number tracks children start with 16 and count back 8 16 – 8 = 8   	Children to represent what they see pictorially e.g.  Numbers to 20	Children to represent the calculation on a number line or number track and show their jumps. Encourage children to use an empty number line   Put 17 in your head. Count back 4. What number are you at?

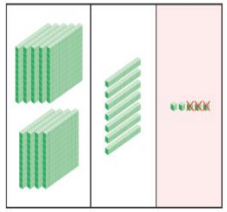
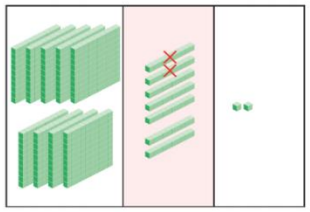
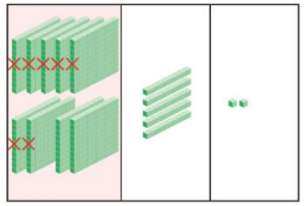
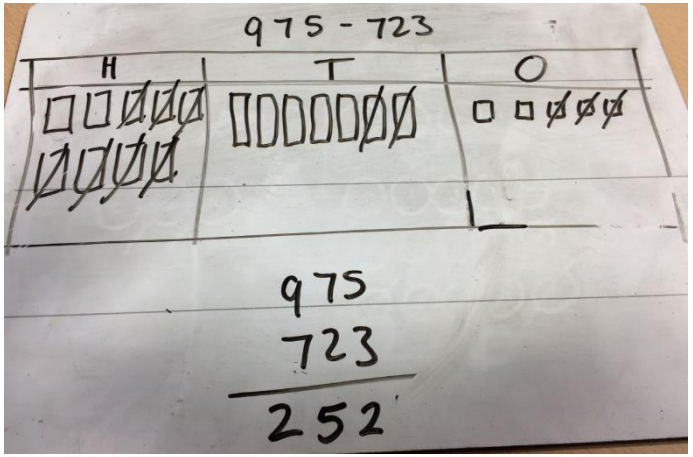
Make 10	**Making 10** using ten frames. 14 – 5 	Children to present the ten frame pictorially and discuss what they did to make 10. 	Children to show how they can make 10 by partitioning the subtrahend.  14 – 4 = 10 10 – 1 = 9

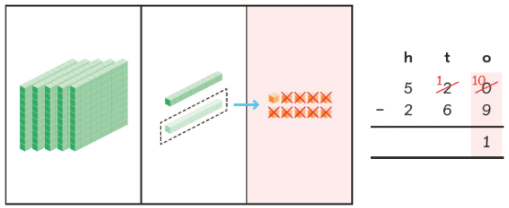
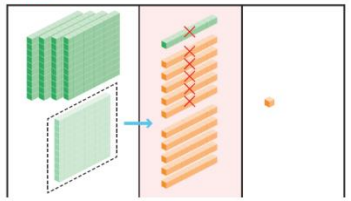
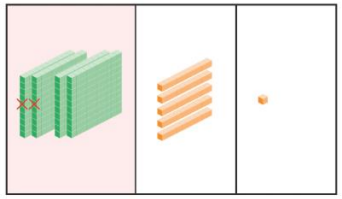
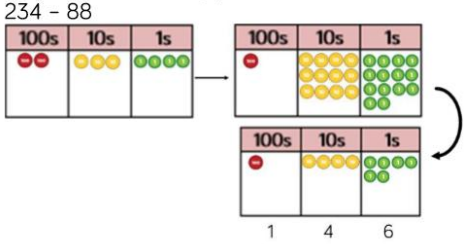
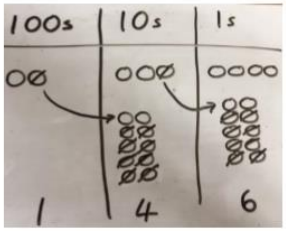
Year 2

Objective and strategies	Concrete	Pictorial	Abstract
Column method- no exchanging	Column method using base 10. 48-7  Use place value discs to subtract  	Children to represent the base 10 pictorially.  **Children to represent place value discs pictorially**  	 This will lead to a clear written column subtraction. 

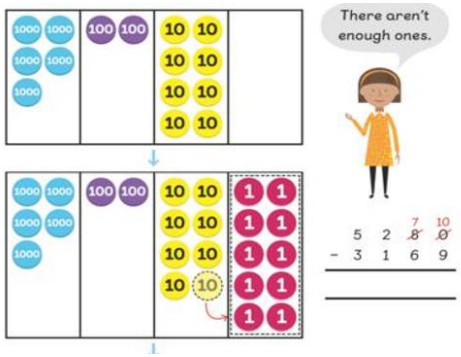
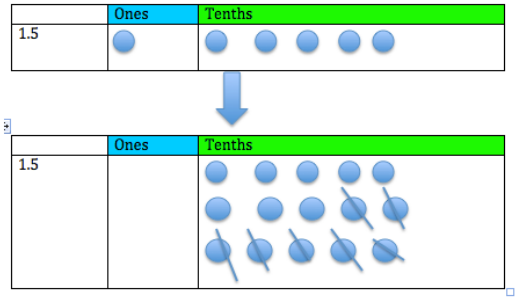
Column method with exchanging	**Column method** using base 10 and having to exchange. 41 – 26  Column method using place value counters 45 – 28    	Represent the base 10 pictorially, remembering to show the exchange.  Represent the place value disks pictorially.  	Formal column method. Children must understand that when they have exchanged the 10 they still have 41 because 41 = 30 + 11. 

Year 3

Objective and strategies	Concrete	Pictorial	Abstract
Column method no exchanging	Subtract 723 from 975. Step 1 Subtract the ones. 5 ones − 3 ones = 2 ones  Step 2 Subtract the tens. 7 tens − 2 tens = 5 tens  Step 3 Subtract the hundreds. 9 hundreds − 7 hundreds = 2 hundreds  975 − 723 = 252 **Children then progress onto using place value counters using strategy outlined in year 2 guidance.**	**Children represent base ten pictorially**  **Children then progress onto using place value counters using strategy outlined in year 2 guidance.**	

Column method with exchanging	**520 – 269 =** Step 1  h t o 5 12 10 – 2 6 9 1 Step 2 Regroup 1 hundred into 10 tens. Subtract the tens. 11 tens – 6 tens = 5 tens  h t o 4 11 10 – 2 6 9 5 1 Step 3 Subtract the hundreds. 4 hundreds – 2 hundreds = 2 hundreds  h t o 4 11 10 – 2 6 9 2 5 1 520 – 269 = 251 **Column method** using place value counters. 234 – 88  	**Children represent base ten apparatus pictorially as outlined above** Represent the place value counters pictorially; remembering to show what has been exchanged.  	Formal colum method. Children must understand what has happened when they have crossed out digits. 2 1 2 3 4 - 8 8 6

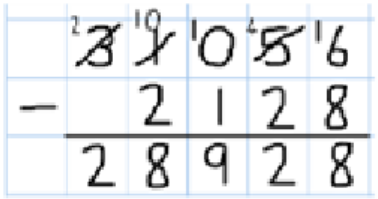
Year 4

Objective and strategies	Concrete	Pictorial	Abstract
Column method not exchanging and exchanging	Base 10 apparatus to subtract 5436 - 3412  Take away the physical apparatus. Progress onto using place value disks: 5280 - 3169 	**Pictorial representation of base 10 apparatus and place value disks as outlined in the year 3 guidance above.**	6754 - 2468 = 6 14 1 6754 - 2468 4286 **1.5m - 0.7m =**  **So 1.5m – 0.7m = 0.8m**

Year 5

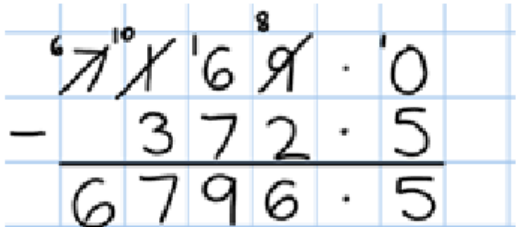
Objective and strategies	Concrete	Pictorial	Abstract
Subtract with at least four digit numbers and decimals (children may do this concrete or pictorially first if conceptual understanding is not there)			

Subtract with decimal values, including mixtures of integers and decimals, aligning the decimal point.



	~~2~~	~~3~~ ~~10~~	0	~~5~~ ~~4~~	6
−		2	1	2	8
	2	8	9	2	8

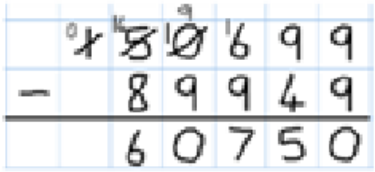
Approximate, Calculate, Check .

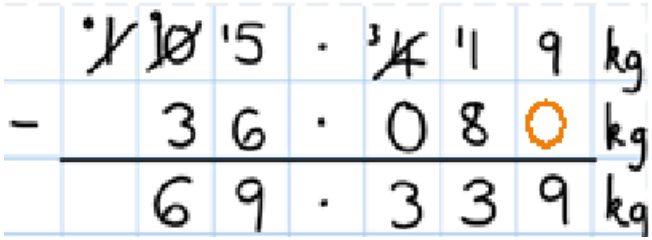


	~~6~~	~~7~~ ~~10~~	~~6~~	~~9~~ ~~8~~	. 0
−		3	7	2	. 5
	6	7	9	6	. 5

Year 6

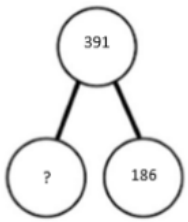
Objective and strategies	Concrete	Pictorial	Abstract
Subtracting increasingly large and complex numbers and decimal values (children may do this concrete or pictorially first if conceptual understanding is not there)			





Very important to use in a range of contexts- measures and money.

Conceptual variation; different ways to ask children to solve 391 - 186



391	
186	?

Raj spent £391, Timmy spent £186.
How much more did Raj spend?

Calculate the difference between 391 and 186.

□ = 391 – 186

391
-186
___

What is 186 less than 391?

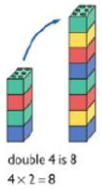
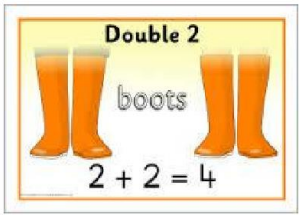
Missing digit calculations

3 9 □
- □ □ 6
□ 0 5

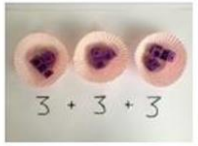
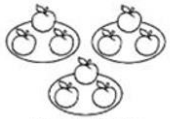
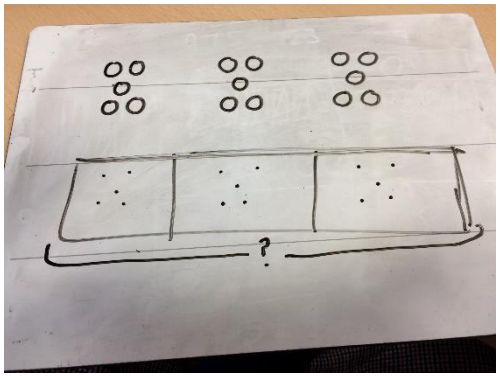
Calculation policy: Multiplication

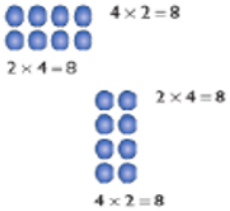
Key language: double, times, multiplied by, the product of, groups of, lots of, equal groups.

Reception

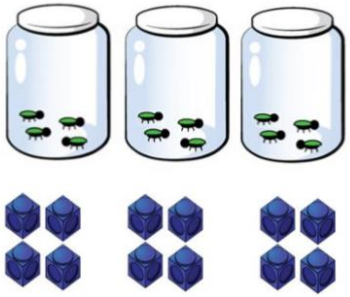
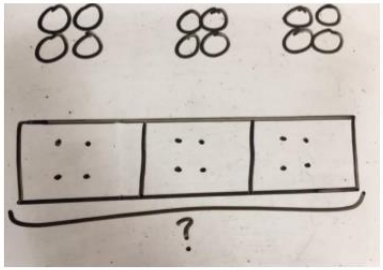
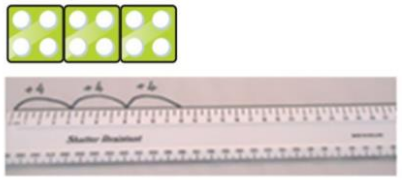
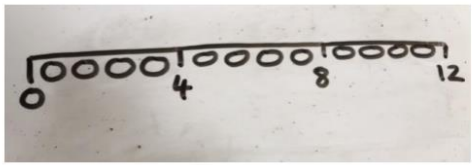
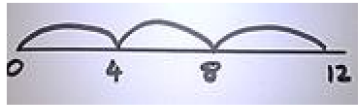
Objective and strategies	Concrete	Pictorial	Abstract
Doubling	Use practical activities to show how to double a number.  double 4 is 8 4 × 2 = 8 	Draw pictures to show how to double a number. Double 4 is 8 	**Children recite doubles to 20 by memory**

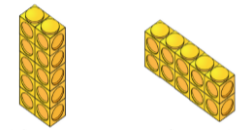
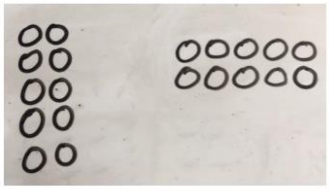
Year 1

Objective and strategies	Concrete	Pictorial	Abstract
Counting in multiples of 2, 5 and 10	  Count in multiples supported by concrete objects in equal groups.	Use pictures to continue support in counting in multiples 	Count in multiples of a number aloud. Write sequences with multiples of numbers. **2, 4, 6, 8, 10** **5, 10, 15, 20, 25, 30**
Repeated addition	  Use different objects to add equal groups.   	Children to represent the practical resources in a picture and use a bar model  	3 x 5 = 15 5 + 5 + 5 = 15

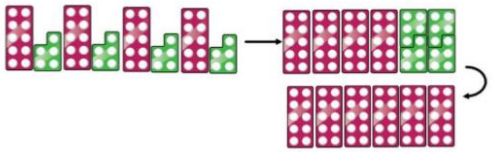
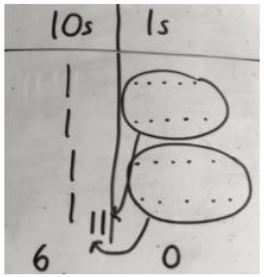
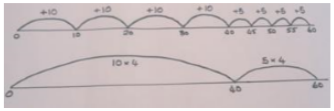
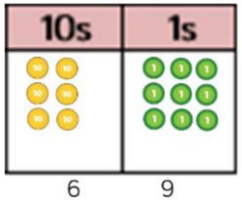
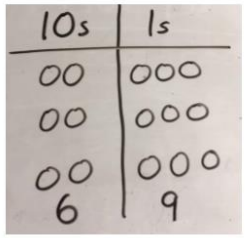
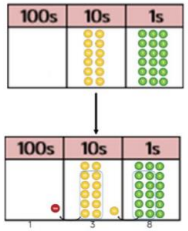
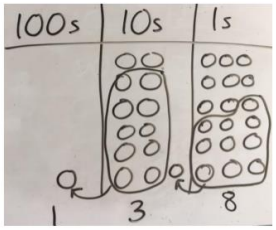
Arrays	Create arrays using counters/ cubes to show multiplication sentences. 	 Draw arrays in different rotations to find **commutative** multiplication sentences.	Use an array to write multiplication sentences and reinforce repeated addition.

Year 2

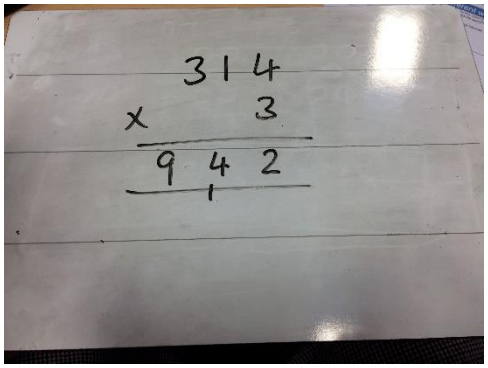
Objective and strategies	Concrete	Pictorial	Abstract
Repeated grouping/repeated addition	3 × 4 4 + 4 + 4 There are 3 equal groups, with 4 in each group. 	Children to represent the practical resources in a picture and use a bar model. 	3 × 4 = 12 4 + 4 + 4 = 12
Number lines to show repeated groups	Number lines to show repeated groups- 3 × 4  Cuisenaire rods can be used too.	Represent this pictorially alongside a number line e.g.: 	Abstract number line showing three jumps of four. 3 × 4 = 12 

Use arrays to illustrate commutativity	**Use arrays to illustrate commutativity** counters and other objects can also be used. $2 \times 5 = 5 \times 2$  2 lots of 5 5 lots of 2	Children to represent the arrays pictorially. 	Children to be able to use an array to write a range of calculations e.g. $10 = 2 \times 5$ $5 \times 2 = 10$ $2 + 2 + 2 + 2 + 2 = 10$ $10 = 5 + 5$

Year 3

Objective and strategies	Concrete	Pictorial	Abstract
Partition to multiply	**Partition to multiply** using Numicon, base 10 or Cuisenaire rods. 4 × 15 	Children to represent the concrete manipulatives pictorially. 	Children to be encouraged to show the steps they have taken. 4 x 15 10 5 10 x 4 = 40 5 x 4 = 20 40 + 20 = 60 A number line can also be used 
Formal column method	**Formal column method** with place value counters (base 10 can also be used.) 3 × 23 	Children to represent the counters pictorially. 	Children to record what it is they are doing to show understanding. 3 × 23 20 3 3 × 20 = 60 3 × 3 = 9 60 + 9 = 69 23 × 3 69
Formal column method	**Formal column method** with place value counters. 6 x 23 	Children to represent the counters/base 10, pictorially e.g. the image below. 	Formal written method 6 x 23 = 23 × 6 138 1 1

Year 4

Objective and strategies	Concrete	Pictorial	Abstract
4 digit x 1 digit	Repeat strategies listed above in year 3 objectives if required. Most children should be quickly moving on to the abstract stage of learning.	Repeat strategies listed above in year 3 objectives if required. Most children should be quickly moving on to the abstract stage of learning.	314 × 3 12 (3 × 4) 30 (3 × 10) + 900 (3 × 300) 942 Progressing onto… 

Year 5 and 6

Objective and strategies	Concrete	Pictorial	Abstract
Column method multiplying by a 2 digit number			

Start with long multiplication, reminding the children about lining up their numbers clearly in columns.

If it helps, children can write out what they are solving next to their answer.

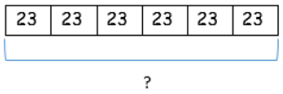
```
  32
x 24
  8    (4 x 2)
 120   (4 x 30)
  40   (20 x 2)
 600   (20 x 30)
 768
```

```
    7 4
  x 6 3
  -----
    1 2
  2 1 0
  2 4 0
+ 4 2 0 0
  -------
  4 6 6 2
```

This moves to the more compact method.

```
    2 3 1
    1342
  x   18
  -------
  13420
  10736
  -------
  24156
  -------
    1
```

Conceptual variation; different ways to ask children to solve 6 × 23



Mai had to swim 23 lengths, 6 times a week.
How many lengths did she swim in one week?

With the counters, prove that 6 x 23 = 138

Find the product of 6 and 23

6 × 23 =

□ = 6 × 23

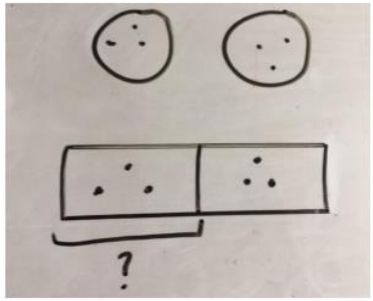
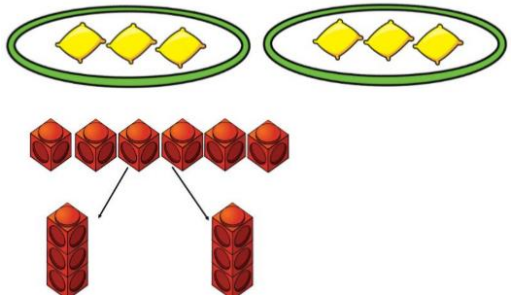
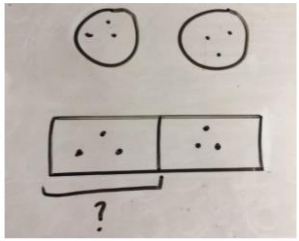
6 × 23 = 23 × 6

What is the calculation?
What is the product?

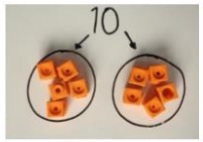
Calculation policy: Division

Key language: share, group, divide, divided by, half.

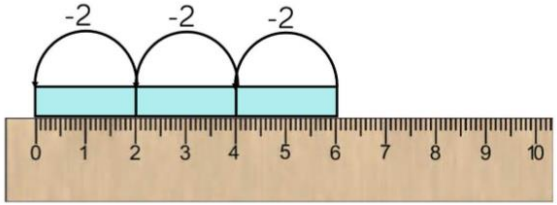
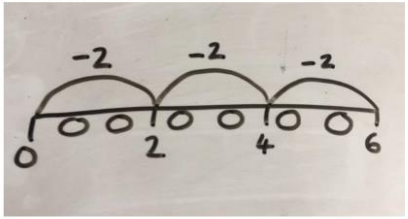
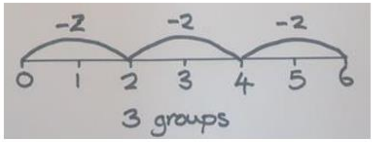
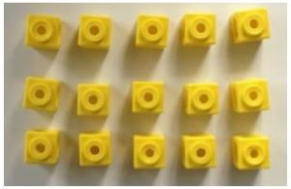
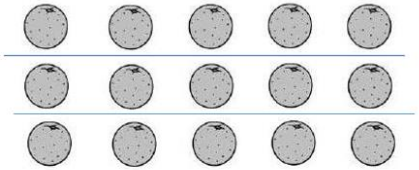
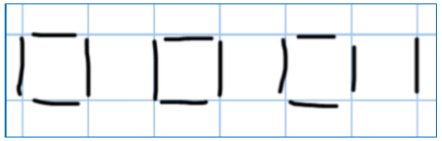
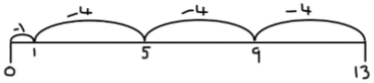
Rec

Objective and strategies	Concrete	Pictorial	Abstract
Halving	**Use of concrete resources to support conceptual understanding.** 	Represent the sharing pictorially. 	**Children to recite halves of numbers up to 20 from memory (after lots of practical work first).**
Sharing using a range of objects		Represent the sharing pictorially. 	Share objects into equal groups. Use related vocabulary. Activities might include: Sharing of milk at break time. Sharing sweets on a child's birthday. Sharing activities in the home corner. 6 ÷ 2 = 3 3 | 3 Children should also be encouraged to their 2 times tables facts.

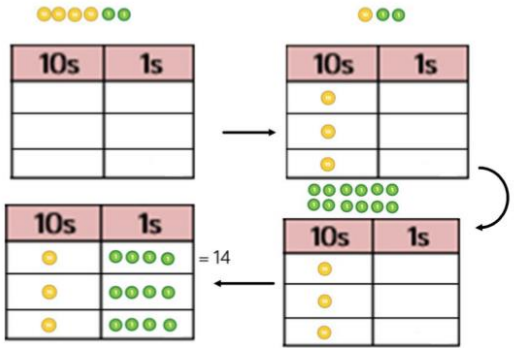
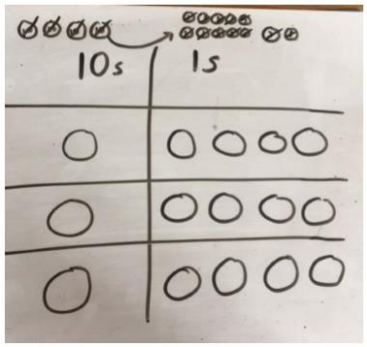
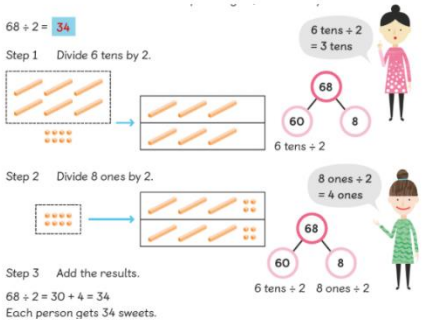
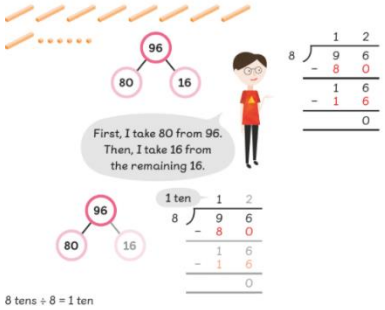
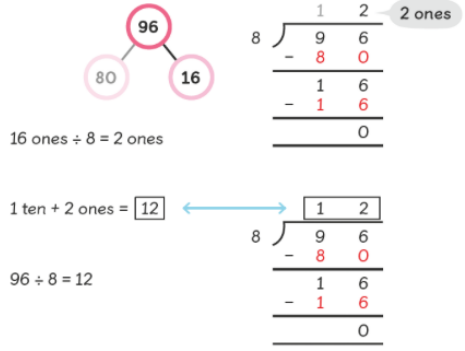
Year 1

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

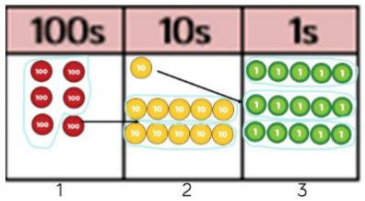
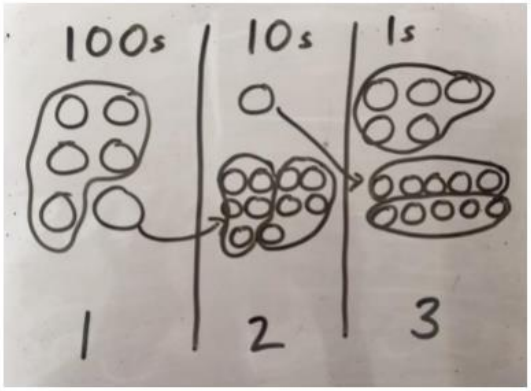
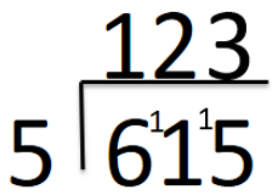
Year 2

Objective and strategies	Concrete	Pictorial	Abstract
Repeated subtraction	**Repeated subtraction** using Cuisenaire rods above a ruler. 6 ÷ 2  3 groups of 2	Children to represent repeated subtraction pictorially. 	Abstract number line to represent the equal groups that have been subtracted. 
Division with arrays	 Link division to multiplication by creating an array and thinking about the number sentences that can be created. E.g. 15 ÷ 3 = 5 5 x 3 = 15 15 ÷ 5 = 3 3 x 5 = 15	 Draw an array and use lines to split the array into groups to make multiplication and division sentences.	Find the inverse of multiplication and division sentences by creating four linking number sentences. 4 x 5 = 20 5 x 4 = 20 20/4 = 5 20/5 = 4
2d/1d with remainders	**2d ÷ 1d with remainders** using lollipop sticks. Cuisenaire rods, above a ruler can also be used. 13 ÷ 4 Use of lollipop sticks to form wholes- squares are made because we are dividing by 4.  There are 3 whole squares, with 1 left over.	Children to represent the lollipop sticks pictorially.  There are 3 whole squares, with 1 left over.	13 ÷ 4 = 3 remainder 1 Children should be encouraged to use their times table facts; they could also represent repeated addition on a number line. '3 groups of 4, with 1 left over' 

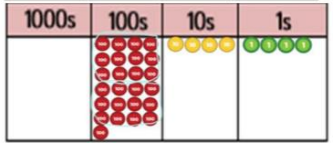
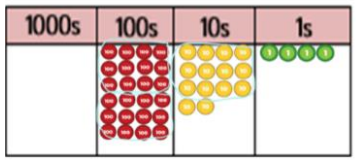
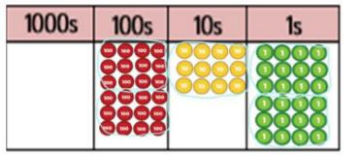
Year 3

Objective and strategies	Concrete	Pictorial	Abstract
Sharing using place value counters	Sharing using place value counters. 42 ÷ 3 = 14 	Children to represent the place value counters pictorially. 	Children to be able to make sense of the place value counters and write calculations to show the process. 42 ÷ 3 42 = 30 + 12 30 ÷ 3 = 10 12 ÷ 3 = 4 10 + 4 = 14
Short division			

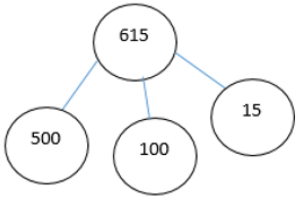
Year 4

Objective and strategies	Concrete	Pictorial	Abstract
Short division	**Short division** using place value counters to group. 615 ÷ 5  1. Make 615 with place value counters. 2. How many groups of 5 hundreds can you make with 6 hundred counters? 3. Exchange 1 hundred for 10 tens. 4. How many groups of 5 tens can you make with 11 ten counters? 5. Exchange 1 ten for 10 ones. 6. How many groups of 5 ones can you make with 15 ones?	Represent the place value counters pictorially.  	Children to the calculation using the short division scaffold. 

Year 5 and 6

Objective and strategies	Concrete	Pictorial	Abstract
Long division	**Long division** using place value counters 2544 ÷ 12  We can't group 2 thousands into groups of 12 so will exchange them.  We can group 24 hundreds into groups of 12 which leaves with 1 hundred.  After exchanging the hundred, we have 14 tens. We can group 12 tens into a group of 12, which leaves 2 tens.  After exchanging the 2 tens, we have 24 ones. We can group 24 ones into 2 group of 12, which leaves no remainder.	Divide numbers up to 4 digits by a one-digit or two digit number using the formal written method of short division and interpret remainders appropriately for the context 432 ÷ 15 becomes 1 5 | 4 3 2 → 3 0 0 → 1 3 2 → 1 2 → 1 2 r 12 432 ÷ 15 becomes 2 8 r 12 1 5 | 4 3 2 3 0 0 (15×20) 1 3 2 1 2 0 (15×8) 1 2 $\frac{12}{15} = \frac{4}{5}$ Answer: $28\frac{4}{5}$ 432 ÷ 15 becomes 2 8 · 8 1 5 | 4 3 2 · 0 3 0 ↓ 1 3 2 1 2 0 ↓ 1 2 0 1 2 0 0 Answer: 28·8

Conceptual variation; different ways to ask children to solve 615 ÷ 5

Using the part whole model below, how can you divide 615 by 5 without using short division?  	I have £615 and share it equally between 5 bank accounts. How much will be in each account? 615 pupils need to be put into 5 groups. How many will be in each group?	$5 \overline{)615}$ 615 ÷ 5 = ☐ = 615 ÷ 5	What is the calculation? What is the answer?