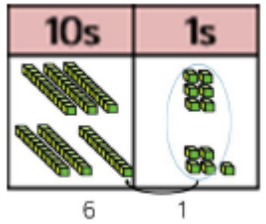
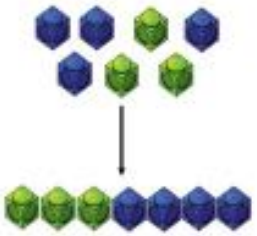
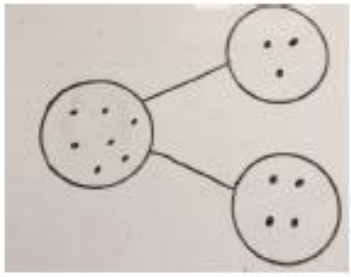
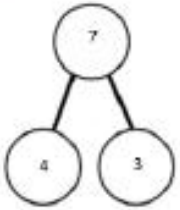
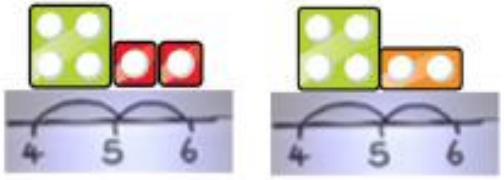
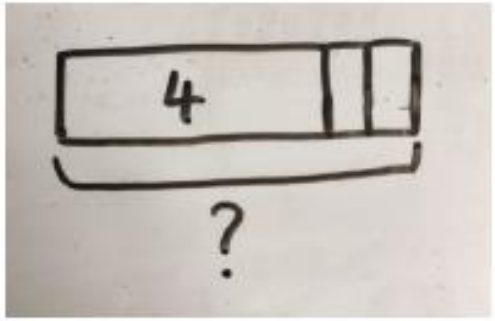
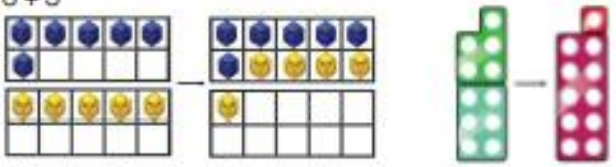
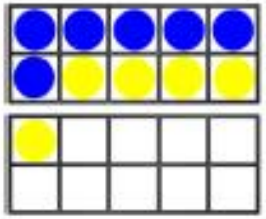
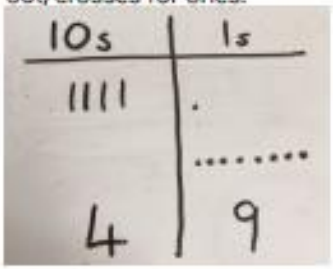
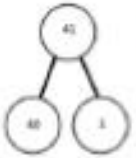
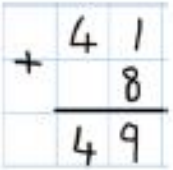
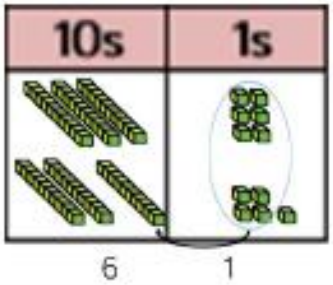
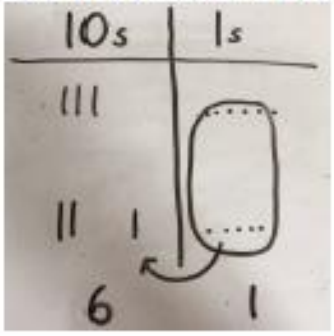
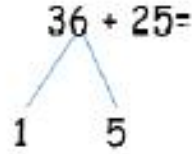
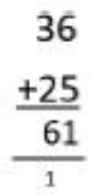
Church Aston Infant School Calculation Policy 2018 (Adapted from White Rose Maths 2018)

Overview	EYFS/Year 1	Year 2
Addition	Combining two parts to make wa whole:part whole model. Starting at the bigger number and counting on using cubes. Regrouping to make 10 using ten frame	Adding three single digits. Use of base 10 to combine two numbers  Base 10
Subtraction	Take away ones Counting back Find the difference Part whole model Make 10 using the ten frame	Counting back Finding the difference Part whole model Make 10 Use of 10 base
Multiplication	Recognising and making equal groups Doubling Counting in multiples, use cubes and other objects	Arrays – showing commutative multiplication
Division	Sharing objects into groups Division as grouping e.g. I have 12 sweets and put them into groups of 3, how many groups? Use cubes and draw around three cubes at a time	Division as grouping Division within arrays – linking to multipliction Repeated subtraction

Addition

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

Concrete	Pictorial	Abstract
Combining two parts to make a whole (use other resources too e.g. eggs, shells, teddy bears, cars). 	Children to represent the cubes using dots or crosses. They could put each part on a part whole model too. 	4 + 3 = 7 Four is a part, 3 is a part and the whole is seven. 
Counting on using number lines using cubes or Numicon.  	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 

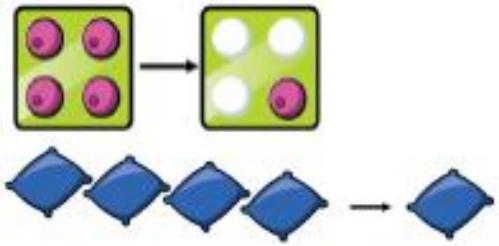
Regrouping to make 10; using ten frames and counters/cubes or using Numicon. 6 + 5 	Children to draw the ten frame and counters/cubes. 	Children to develop an understanding of equality e.g. $6 + \square = 11$ $6 + 5 = 5 + \square$ $6 + 5 = \square + 4$
TO + O using base 10. Continue to develop understanding of partitioning and place value. 41 + 8 	Children to represent the base 10 e.g. lines for tens and dot/crosses for ones. 	41 + 8  1 + 8 = 9 40 + 9 = 49 
TO + TO using base 10. Continue to develop understanding of partitioning and place value. 36 + 25 	Chidlren to represent the base 10 in a place value chart. 	Looking for ways to make 10.  30 + 20 = 50 5 + 5 = 10 50 + 10 + 1 = 61 Formal method: 

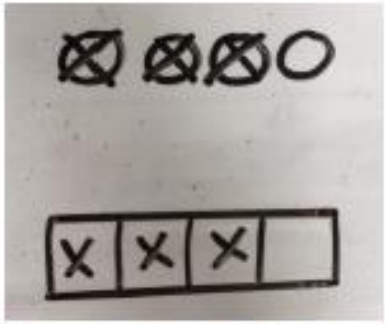
Subtraction

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

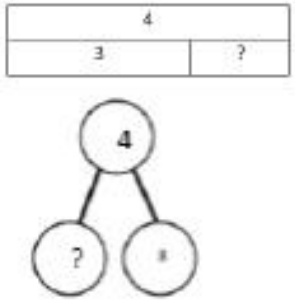
<table>
<tr><th>Concrete</th><th>Pictorial</th><th>Abstract</th></tr>
<tr>
<td>Physically taking away and removing objects from a whole (ten frames, Numicon, cubes and other items such as beanbags could be used).

4 - 3 = 1

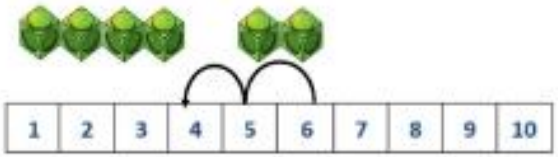
  </td>
<td>Children to draw the concrete resources they are using and cross out the correct amount. The bar model can also be used.

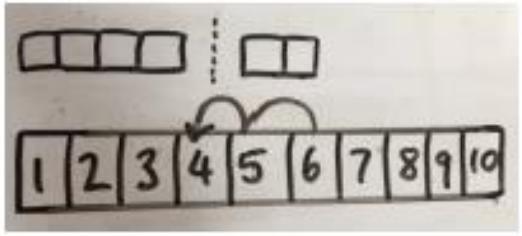
  </td>
<td>4- 3 =

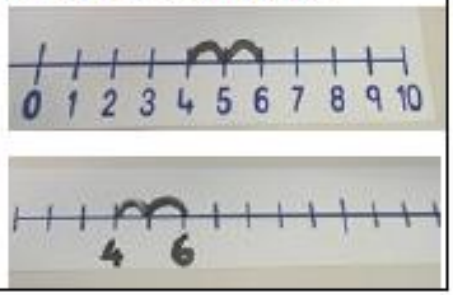
□ = 4 - 3

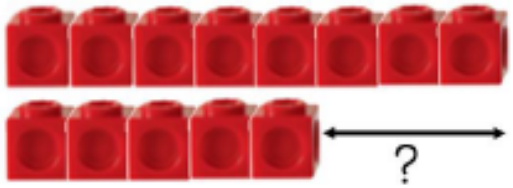
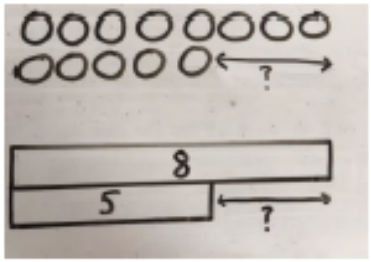
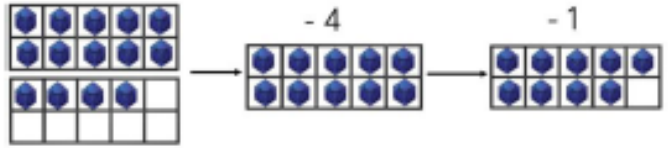
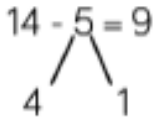
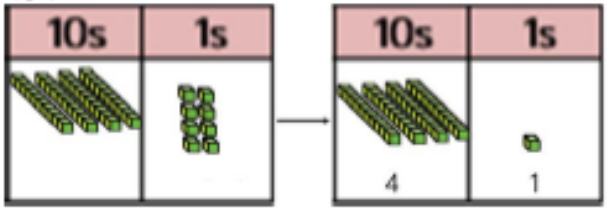
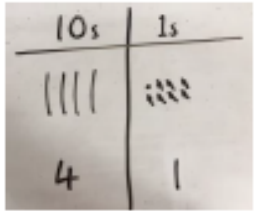
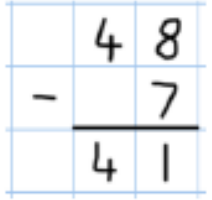
  </td>
</tr>
<tr>
<td>Counting back (using number lines or number tracks) children start with 6 and count back 2.

6 - 2 = 4

  </td>
<td>Children to represent what they see pictorially e.g.

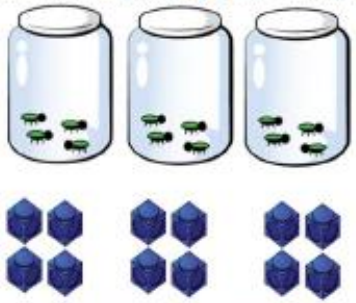
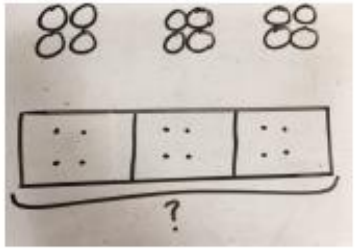
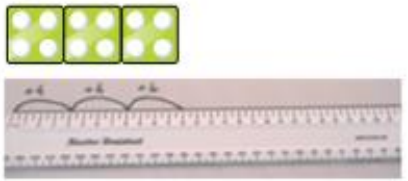
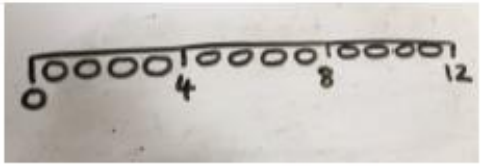
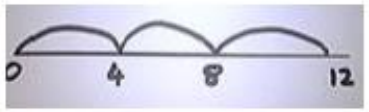
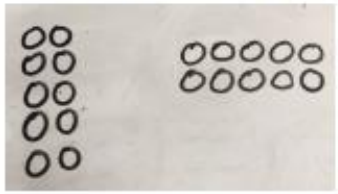
  </td>
<td>Children to represent the calculation on a number line or number track and show their jumps. Encourage children to use an empty number line

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

Finding the difference (using cubes, Numicon or Cuisenaire rods, other objects can also be used). Calculate the difference between 8 and 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.
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
Column method using base 10. 48-7 	Children to represent the base 10 pictorially. 	Column method or children could count back 7. 

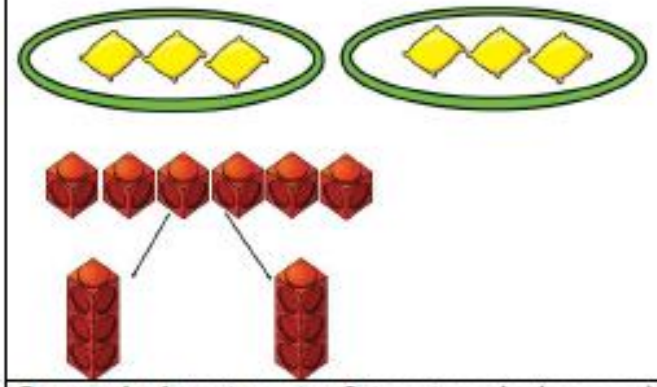
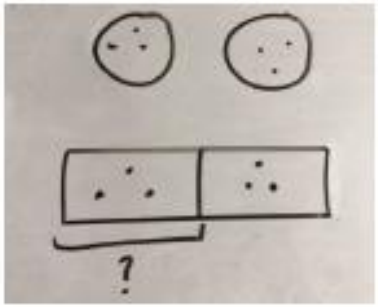
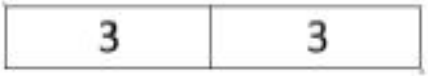
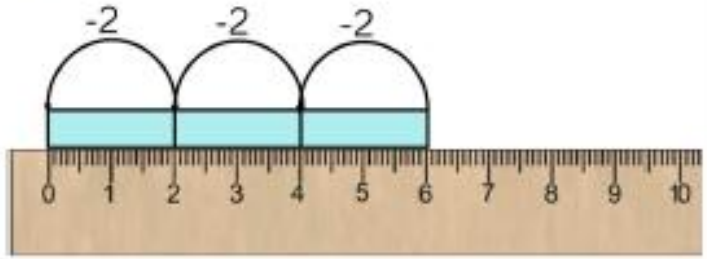
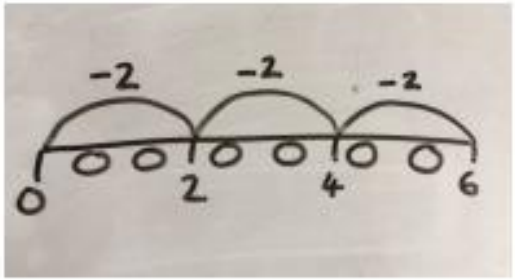
Multiplication

Key vocabulary: double, times, multiplied by, groups of, lots of and equal groups

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- 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 counters and other objects can also be used. 2 × 5 = 5 × 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 × 5 5 × 2 = 10 2 + 2 + 2 + 2 + 2 = 10 10 = 5 + 5

Division

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

Concrete	Pictorial	Abstract
Sharing using a range of objects. 6 ÷ 2 	Represent the sharing pictorially. 	6 ÷ 2 = 3  Children should also be encouraged to use their 2 times tables facts.
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.