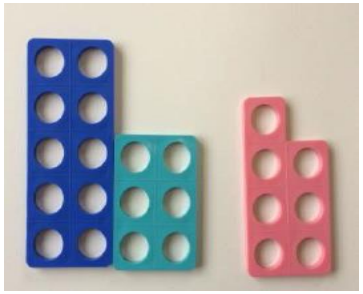
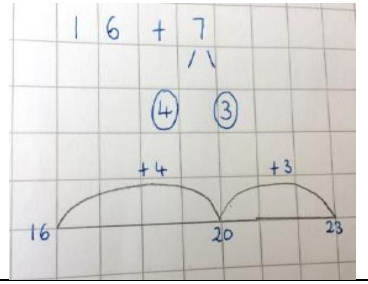
Year Two
Addition

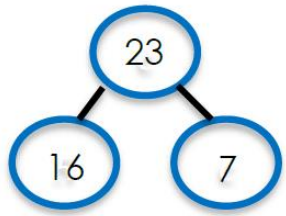
<table>
<tr><td>Year Two</td><td>Pupils should be able to:
Pupils should be taught to:
• solve problems with addition and subtraction:
  ○ using concrete objects and pictorial representations, including those involving numbers, quantities and measures
  ○ applying their increasing knowledge of mental and written methods
• recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100
• add and subtract numbers using concrete objects, pictorial representations, and mentally, including:
  ○ a two-digit number and 1s
  ○ a two-digit number and 10s
  ○ 2 two-digit numbers
• adding 3 one-digit numbers
• show that addition of 2 numbers can be done in any order (commutative) and subtraction of 1 number from another cannot
• recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems</td></tr>
<tr><td colspan="2">Adding a Two-Digit and Ones</td></tr>
<tr><td>Use of practical apparatus to support adding such as numicon, bead strings, etc

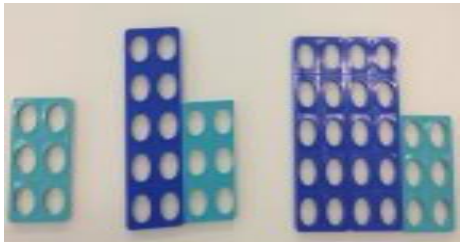
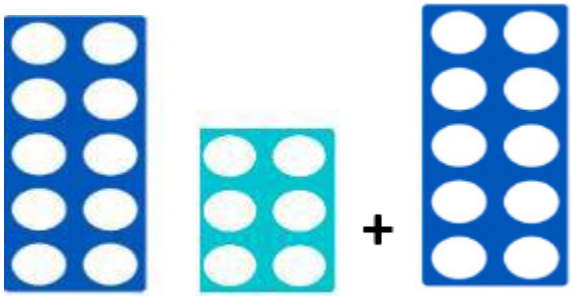
16 + 7 = 23
  </td><td>Use of part, part whole concept so children partition to use knowledge of number bonds to support adding

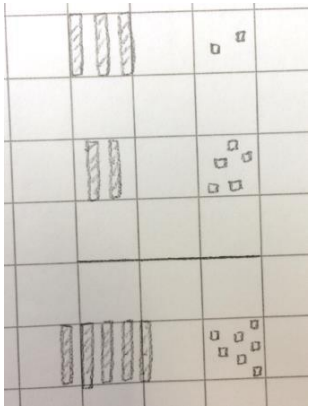
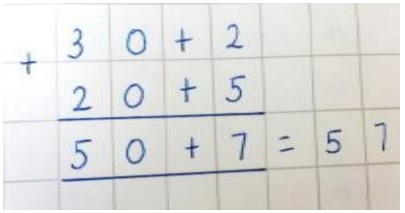
16 + 7=
16 + 4 = 20
20 + 3 = 23
 
</td></tr>
<tr><td colspan="2"></td></tr>
</table>

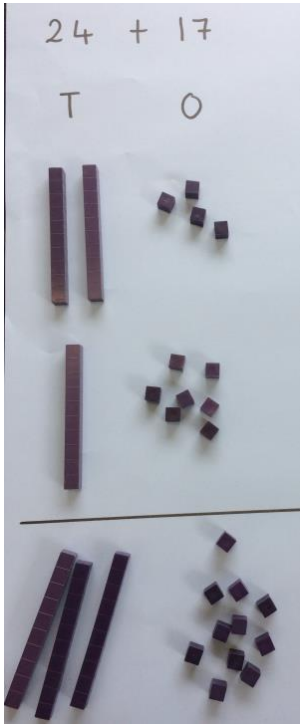
Mentally counting on from the biggest number using partitioning and part, part whole to support

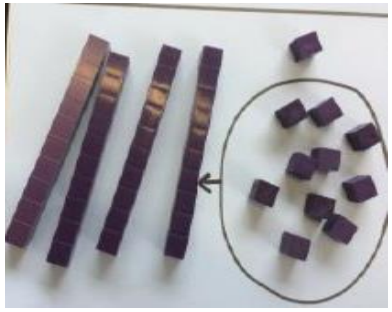
16 + 7= 23
16 + 4 = 20
20 + 3 = 23

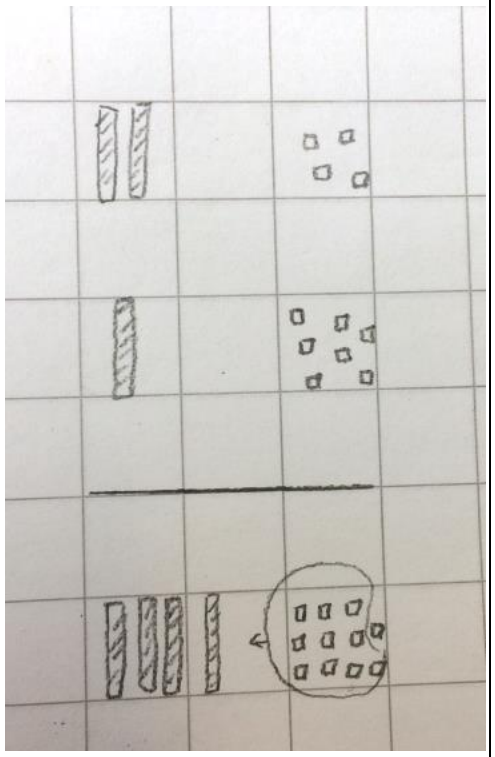


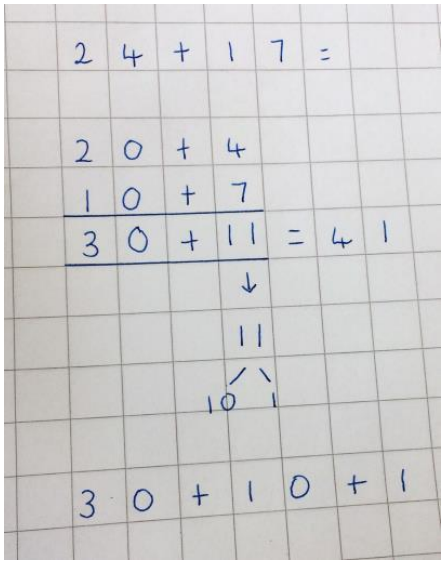
Adding Tens to a Number		
Use of practical apparatus to support adding Bead strings Numicon Dienes Hundred square 6 + 10 = 16 16 + 10= 26 … 	Through use of pictorials in books and children's jottings to support adding tens 16 + 10= 16 	Mentally adding ten to a number in. Children to use knowledge of patterns to add ten to a given number. 16+ 10= 16 Children can explain the pattern they noticed.

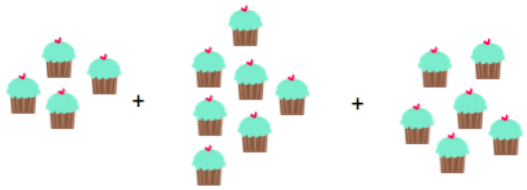
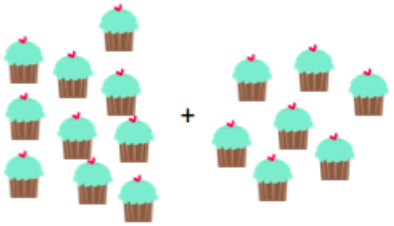
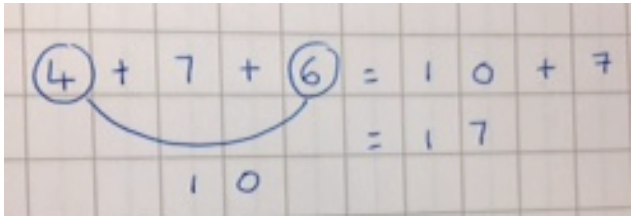
Adding Two Two-Digit Numbers		
Use of dienes to add Add together the ones first then the tens 32 + 25= 57 	Use of children's drawings of dienes/images of dienes to support understanding 32 + 25= 57 	Use of the partitioning method to add 32 + 25= 57 • Partition the 2 digit numbers • Arrange in a column • Add the ones • Add the tens • Recombine 
Use of dienes to add Add together the ones first then the tens 24 + 17= 41	Use of children's drawings of dienes/images of dienes to support understanding 24 + 17= 41	Use of the partitioning method to add • Partition the 2 digit numbers • Arrange in a column • Add the ones • Add the tens • Recombine 24 + 17= 41


24 + 17
T O






24 + 17 =
20 + 4
10 + 7
30 + 11 = 41
11
10 1
30 + 10 + 1

Adding 3 Single-Digit Numbers		
Use of bead strings to show visually 4 +7 + 6= 17 Put 4 and 6 together to make ten. Add on 7 Add together the ones first then the tens 	Add together three groups of objects. Draw a picture to recombine the groups to make 10. 4 +7 + 6= 17  becomes: 	Combine the two numbers that make 10 and then add on the remainder. 

Subtraction

<table>
<tr><td>Year Two</td><td>Pupils should be able to:

Pupils should be able to:
solve problems with subtraction:
using concrete objects and pictorial representations, including those involving numbers, quantities and measures
applying their increasing knowledge of mental and written methods
recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100
subtract numbers using concrete objects, pictorial representations, and mentally, including:
a two-digit number and 1s
a two-digit number and 10s
2 two-digit numbers
show that subtraction is not commutative as addition is
recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems</td></tr>
<tr><td colspan="2">Subtracting a Two-Digit and Ones</td></tr>
<tr><td>Use of practical apparatus to support subtraction such as bead string or unifix /multilink

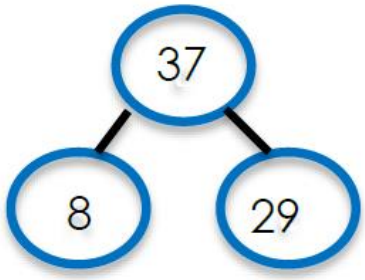
37 - 5 = 32
  </td><td>Use of part, part whole concept so children partition to use knowledge of number bonds to support subtraction as well as subtracting to near 10s

16 - 8=
16 – 6 = 10
10 – 2 = 8</td></tr>
</table>

Mentally counting back from the biggest number using partitioning and part, part whole to support

37…36…35…etc

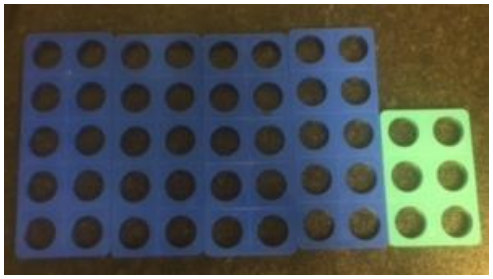
37 – 8 =
37- 7 = 30
30 – 1 = 29

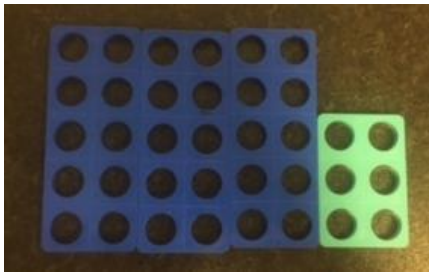


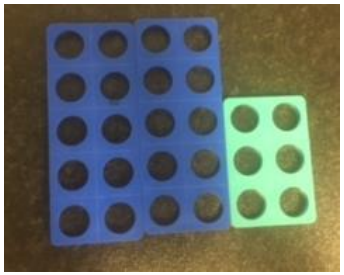
Subtracting Tens from a Number

Use of practical apparatus to support subtracting
Bead strings
Numicon
Dienes
Hundred square

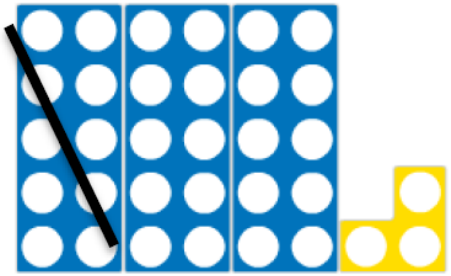
46 – 10 = 36
36 – 10 = 26 …





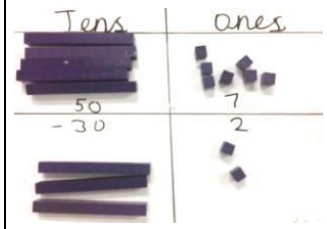
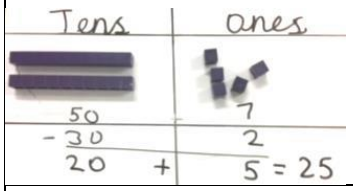
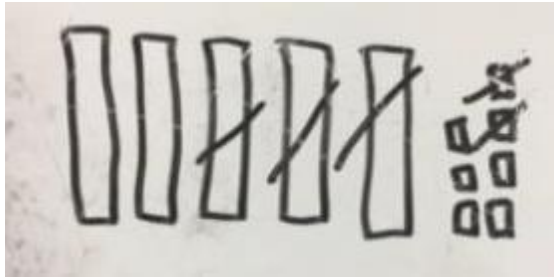
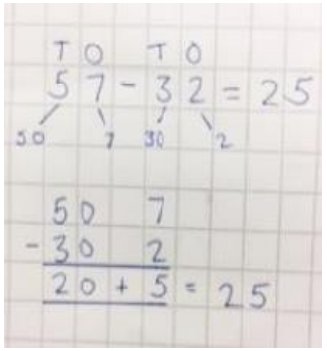


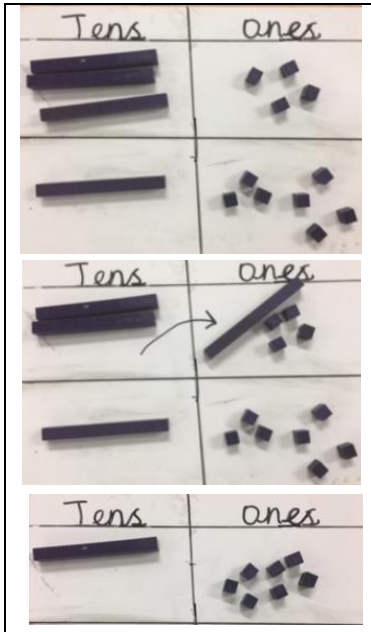
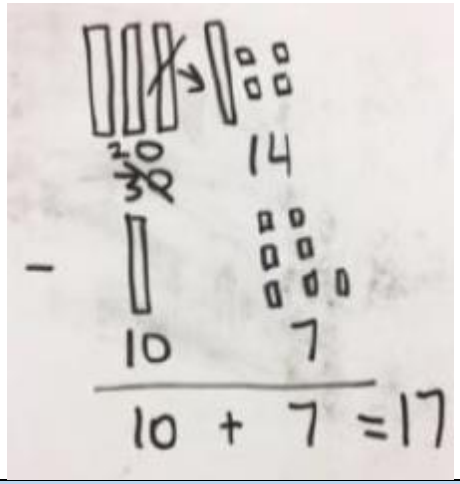
Through use of pictorials in books and children's jottings to support subtracting 10s. Children physically cross out
33 – 10 = 23



Mentally subtracting ten from a number. Children to use knowledge of patterns to subtract tens
35 – 10 = 25

Children can explain the pattern they noticed.

Subtracting Two Two-Digit Numbers		
Use of dienes to subtract Subtract the ones first then the tens  57 – 32 = 25  	Use of children's drawings of dienes/images of dienes to support understanding –Children will physically cross out. 57 – 32 = 25 	Use of the partitioning method to subtract 57 – 32 = 25 • Partition the 2 digit numbers • Arrange in a column • Subtract the ones • Subtract the tens • Recombine 
Use of dienes to subtract Subtract the ones first. Must regroup in order to subtract the ones. Take a ten and add it to the ones column. Now subtract the ones, then subtract the tens Recombine 34 - 17=	Use of children's drawings of dienes/images of dienes to support understanding 34 – 17 =	Use of the partitioning method to subtract • Partition the 2 digit numbers • Arrange in a column • Regroup the tens if cannot subtract the ones • Subtract the ones • Subtract the tens • Recombine 34 - 17 =

<table>
<tr>
<td> 
</td>
<td>Children can draw or use a picture of dienes to physically cross out/draw when subtracting.
 
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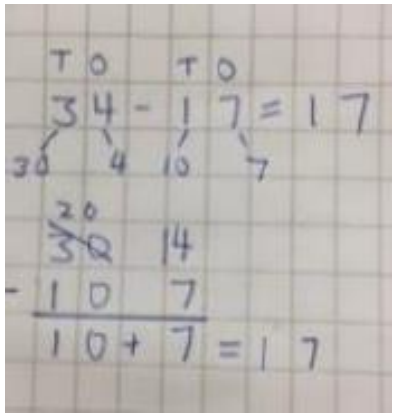
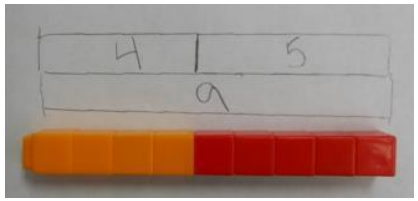
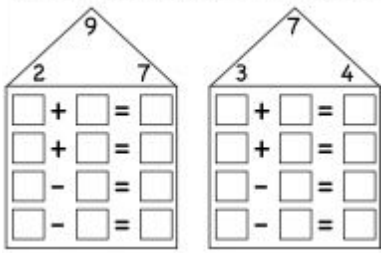
<td> 
</td>
</tr>
<tr>
<td colspan="3">Using the inverse</td>
</tr>
<tr>
<td colspan="2">Children use a bar model to support understanding that addition is commutative (can be done in any order) but subtraction is not.
 


</td>
<td>Children use knowledge of subtraction sentences to say related addition facts
If I know that …

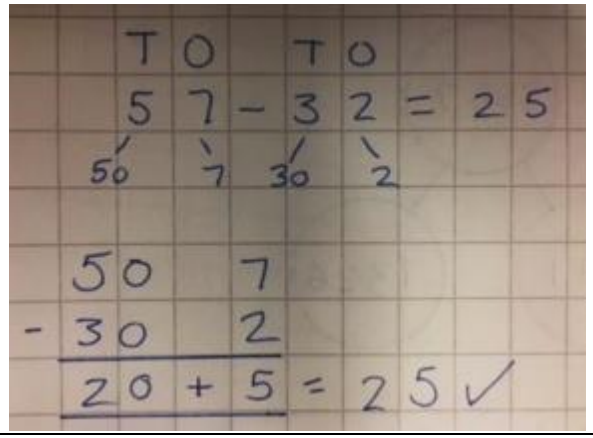
20 + 21 = 41 then I also know…

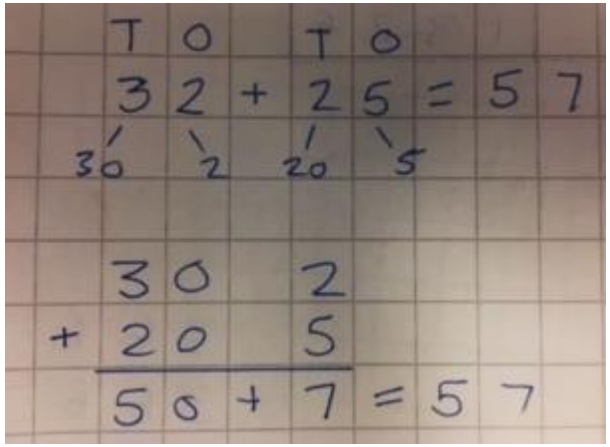
41 – 21 = 20 etc</td>
</tr>
<tr>
<td colspan="2">Children move away from counting on/back to find the missing number to rearranging the number sentence and using the inverse</td>
<td>Children should understand commutativity of addition when using the inverse

_____ - 25 = 42</td>
</tr>
</table>

55 + ____ = 75 75 – 55 = Then use known methods to solve	42 + 25 = 25 + 42 =

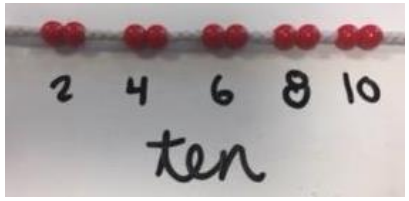
Children understand the relationship between addition and subtraction by using the inverse to check calculations are correct

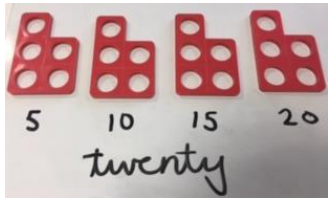




Multiplication

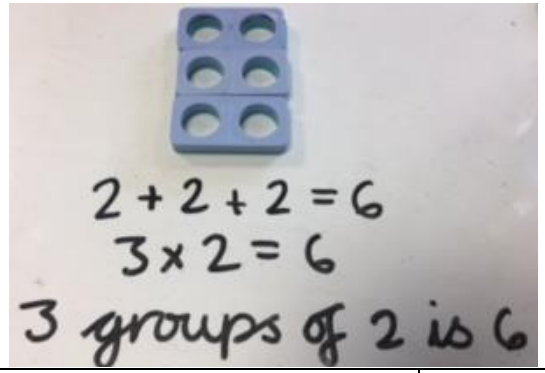
<table>
<tr><td>Year Two</td><td>Pupils should be able to:

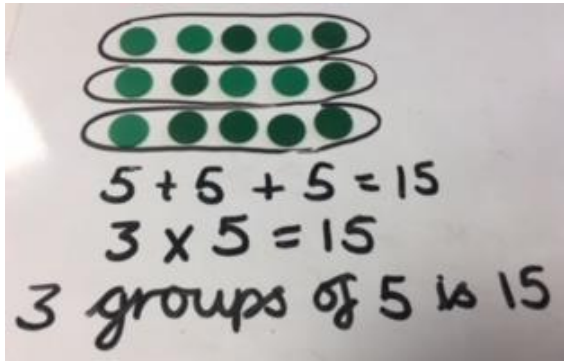
• recall and use multiplication facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers
• calculate mathematical statements for multiplication within the multiplication tables and write them using the multiplication (×) and equals (=) signs
• show that multiplication of two numbers can be done in any order (commutative)
• solve problems involving multiplication, using materials, arrays, repeated addition, mental methods, and multiplication facts, including problems in contexts
.</td></tr>
<tr><td colspan="2">Count in Multiples</td></tr>
<tr><td>Use of practical apparatus to support counting in multiples of 2, 3, 5, and 10
 

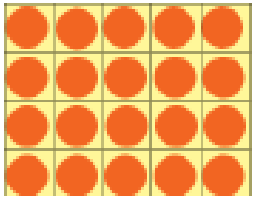

</td><td>Use of pictorials to support counting on in multiples
 
15
Fifteen

3 groups of 5 is 15
 
6
Six

3 groups of 2 is 6</td></tr>
<tr><td colspan="2">Mentally counting on in multiples. Children should use pattern spotting to support their understanding of multiples.
0, 5, 10, 15,…
‘Multiples of 5 end in 0 and 5 only. They are even and odd numbers.’
‘48 cannot be a multiple of 5 because it doesn’t end in a 0 or 5</td></tr>
</table>

<table>
<tr><td colspan="2">Repeated Addition</td></tr>
<tr><td>Children use concrete materials to understand multiplication as addition
 
5 + 5 + 5 + 5 = 20
4 x 5 = 20
 
2 + 2 + 2 + 2 + 2 = 10
5 x 2 = 10</td><td>Use of pictorials in books or drawings to support understanding multiplication as addition
2 x 2 = 4
3 x 2 = 6
4 x 2 = 8
  </td></tr>
<tr><td colspan="2">Arrays</td></tr>
<tr><td colspan="2">Use of practical apparatus to support solving multiplication problems using arrays.
• Counters
• Numicon
 
 

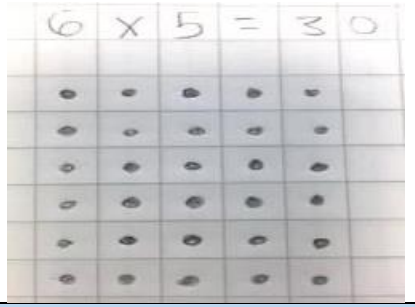
 
</td></tr>
<tr><td>Through use of pictorials in books, children can count total in multiples to solve</td><td>Children can draw an array as a method to solve problems</td></tr>
</table>



5 + 5 + 5 + 5 = 20

4 x 5 = 20

Twenty



Commutative Relationship

Use of concrete resources to show that multiplication can be done in any order

3 x 5 = 15
5 x 3 = 15

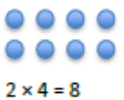
Move and draw arrays in different ways to show the commutative relationship

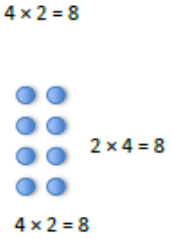
5 + 5 + 5 = 15

3 + 3 + 3 + 3 + 3 = 15

5 x 3 = 15

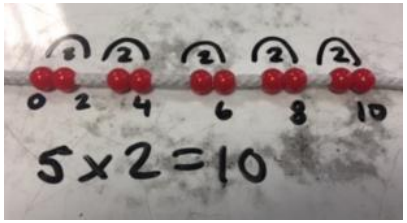
3 x 5 = 15





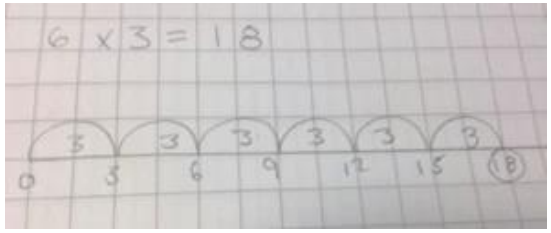
Number Line

Children can use counting beads or Cuisenaire rods to support their understanding of using an empty number line to solve multiplication problems.



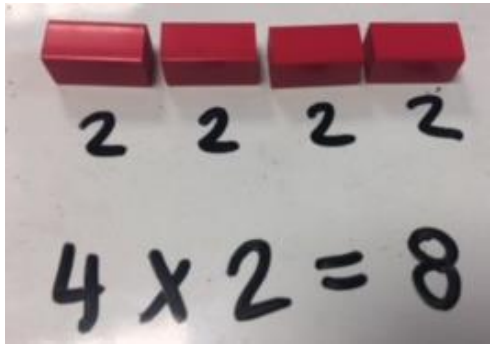
Children can move on to solving more abstractly through an empty number line to solve multiplication problems.

- Start at 0
- Count on in the multiple
- Write the total amount

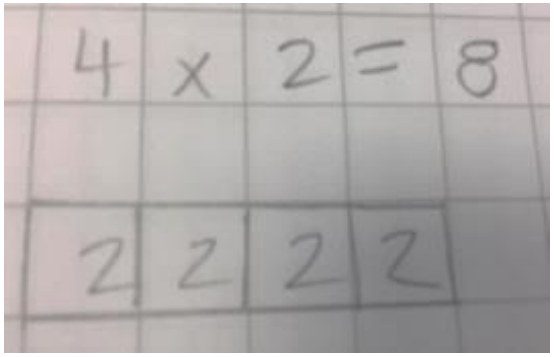


Bar Model

Children can use practical resources such as Cuisenaire rods to solve using a bar model



Then children use pictorial images to support and then moving on to abstractly drawing their own to solve multiplication problems.

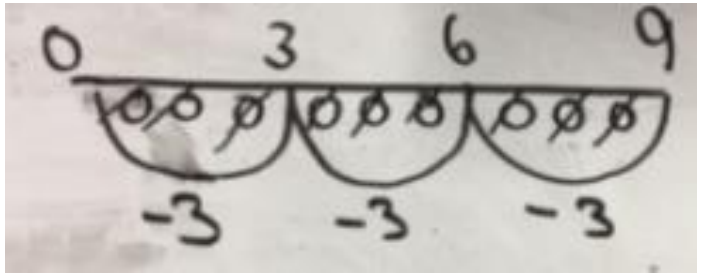


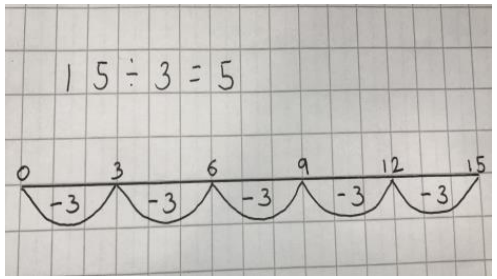
Division

Year Three	Pupils should be able to: • Recall and use division facts for the 3, 4 and 8 multiplication tables • Write and calculate mathematical statements for division using the multiplication tables that they know, including for two-digit numbers times one-digit numbers, using mental and progressing to formal written methods

Repeated Subtraction

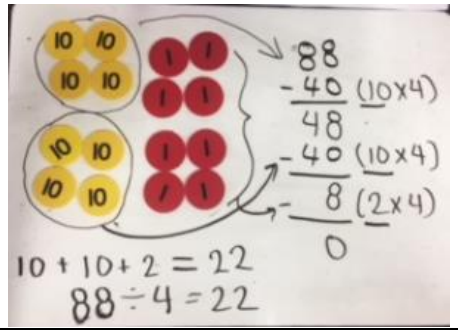
Children use previous methods learned in year 2, but focus on aspect of repeated subtraction to prepare for subtracting when chunking.





Chunking

Children can use place value counters as well as drawings to support this method conceptually.



Children should be encouraged to write down the related time tables facts to support them with the formal method of chunking.