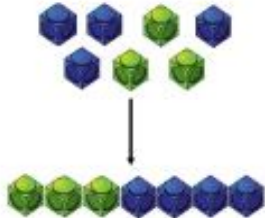
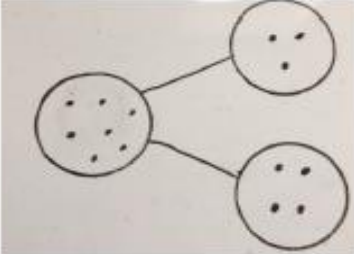
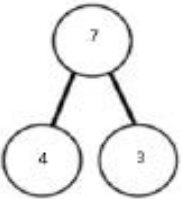
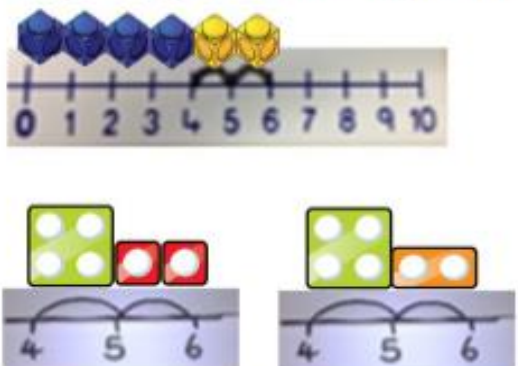
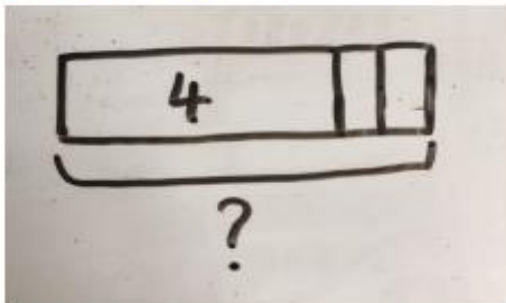



Calculation policy: Addition

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

Concrete	Pictorial	Abstract
<p>Combining two parts to make a whole (use other resources too e.g. eggs, shells, teddy bears, cars).</p> 	<p>Children to represent the cubes using dots or crosses. They could put each part on a part whole model too.</p> 	<p>$4 + 3 = 7$ Four is a part, 3 is a part and the whole is seven.</p> 
<p>Counting on using number lines using cubes or Numicon.</p> 	<p>A bar model which encourages the children to count on, rather than count all.</p> 	<p>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? $4 + 2$</p> 

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.

$41 + 8$

$1 + 8 = 9$
 $40 + 9 = 49$

	4	1
+		8
<hr/>		
	4	9

TO + TO using base 10. Continue to develop understanding of partitioning and place value.

$36 + 25$

Children to represent the base 10 in a place value chart.

Looking for ways to make 10.

$36 + 25 =$

$30 + 20 = 50$
 $5 + 5 = 10$
 $50 + 10 + 1 = 61$

1 5

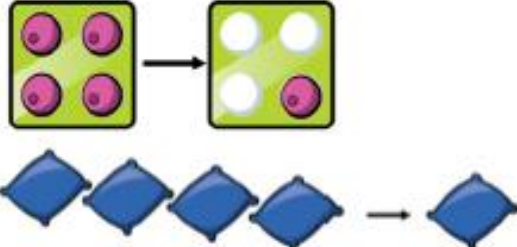
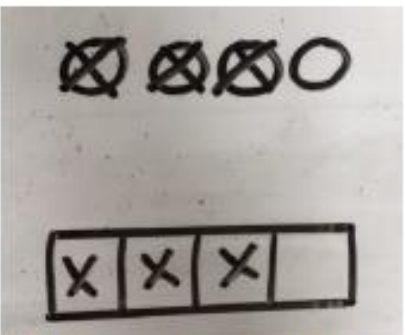
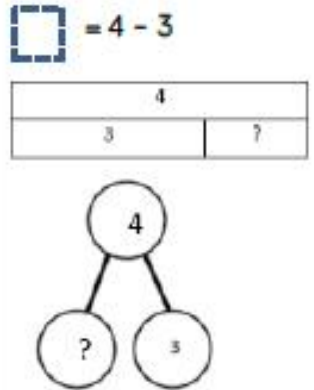

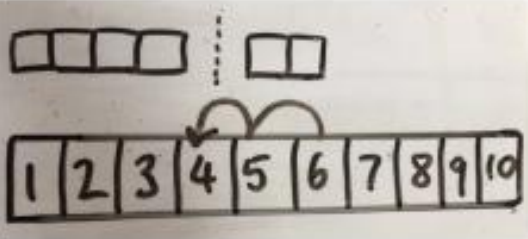
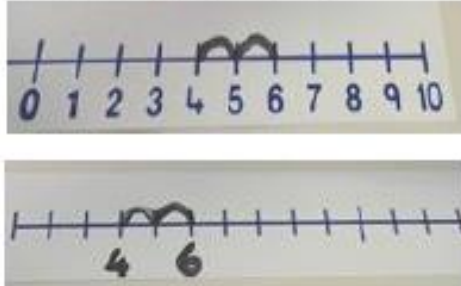
36

Formal method:

	<u>25</u>
	61
	<hr/>
	1

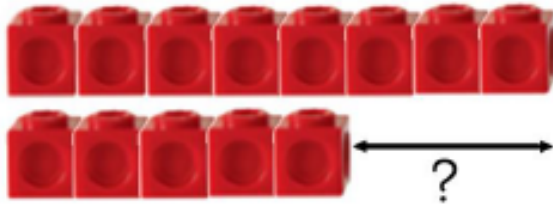
Calculation policy: Subtraction

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

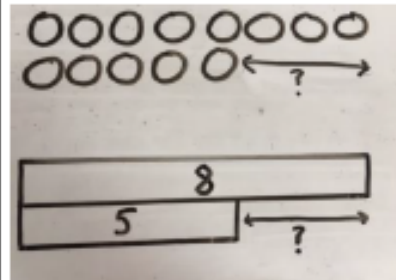
Concrete	Pictorial	Abstract
<p>Physically taking away and removing objects from a whole (ten frames, Numicon, cubes and other items such as beanbags could be used).</p> <p>$4 - 3 = 1$</p> 	<p>Children to draw the concrete resources they are using and cross out the correct amount. The bar model can also be used.</p> 	<p>$4 - 3 =$</p> <p><input type="text" value=""/> = $4 - 3$</p> 
<p>Counting back (using number lines or number tracks) children start with 6 and count back 2.</p> <p>$6 - 2 = 4$</p> 	<p>Children to represent what they see pictorially e.g.</p> 	<p>Children to represent the calculation on a number line or number track and show their jumps. Encourage children to use an empty number line</p> 

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.



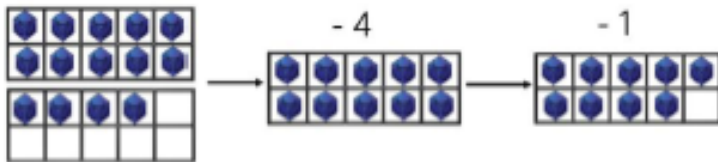
Find the difference between 8 and 5.

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.

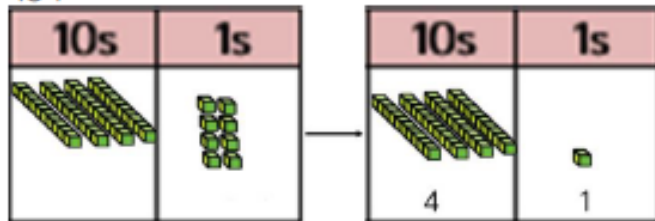
$$14 - 5 = 9$$

$$14 - 4 = 10$$

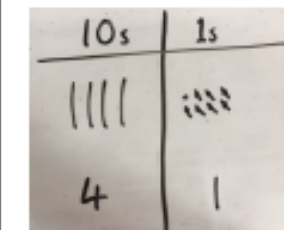
$$10 - 1 = 9$$

Column method using base 10.

$48 - 7$



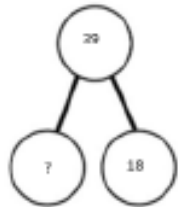
Children to represent the base 10 pictorially.



Column method or children could count back 7.

	4	8
-		7
	4	1

Conceptual variation; different ways to ask children to solve $39 - 18$



39	
18	?

Raj spent £39 Timmy spent £18
How much more did Raj spend?

Calculate the difference between 39 and 18 .

$$\square = 39 - 18$$

$$\begin{array}{r} 39 \\ -18 \\ \hline \end{array}$$

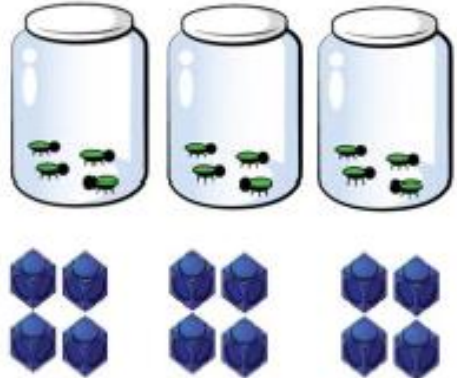
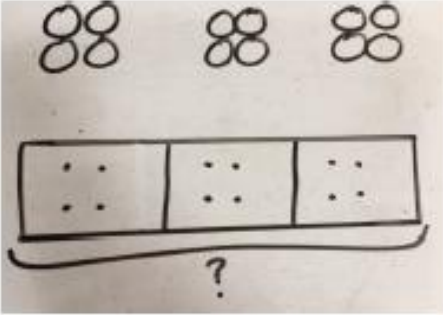
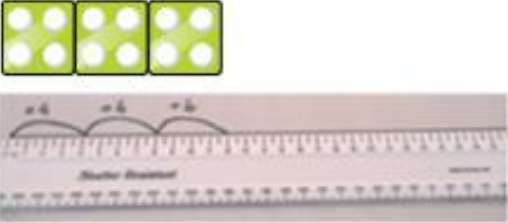
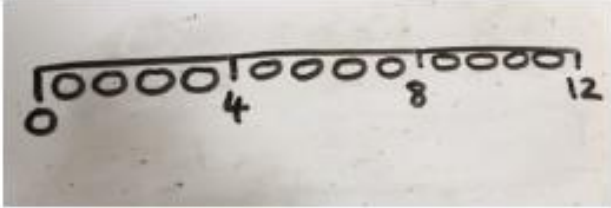
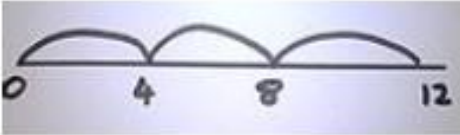
What is 18 less than 39 ?

Missing digit calculations

$$\begin{array}{r} 39 \\ -1\square \\ \hline \square 1 \end{array}$$

Calculation policy: Multiplication

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

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

Use arrays to illustrate commutativity counters and other objects can also be used.

$$2 \times 5 = 5 \times 2$$

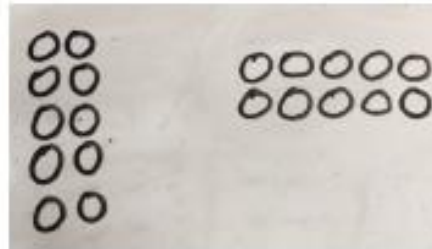


2 lots of 5



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.

$$10 = 2 \times 5$$

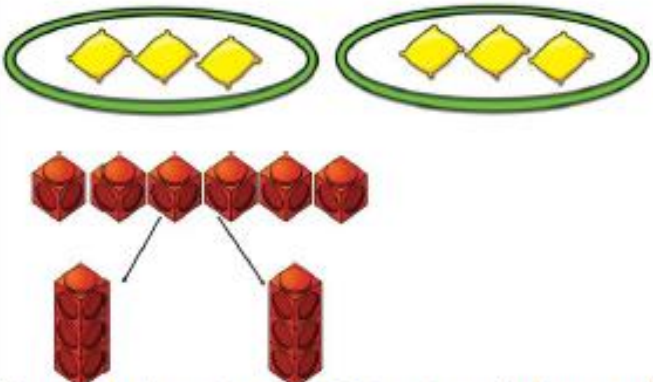
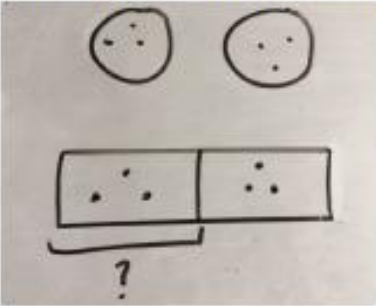
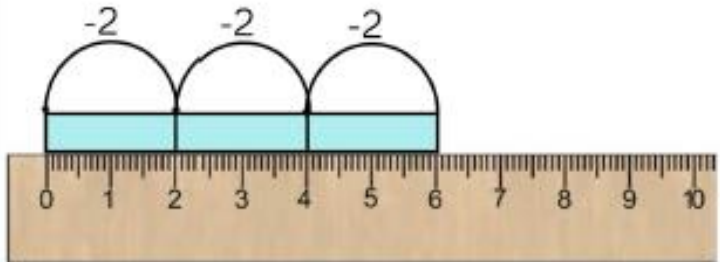
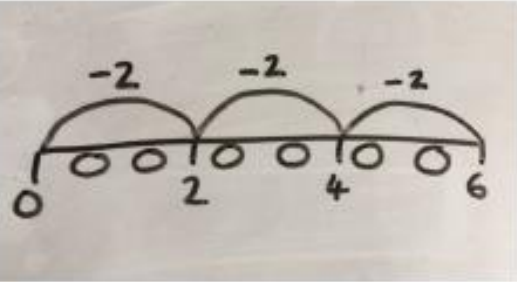
$$5 \times 2 = 10$$

$$2 + 2 + 2 + 2 + 2 = 10$$

$$10 = 5 + 5$$

Calculation policy: Division

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

Concrete	Pictorial	Abstract		
<p>Sharing using a range of objects. $6 \div 2$</p> 	<p>Represent the sharing pictorially.</p> 	<p>$6 \div 2 = 3$</p> <table border="1" data-bbox="1541 587 1966 655"> <tr> <td>3</td> <td>3</td> </tr> </table> <p>Children should also be encouraged to use their 2 times tables facts.</p>	3	3
3	3			
<p>Repeated subtraction using Cuisenaire rods above a ruler. $6 \div 2$</p>  <p>3 groups of 2</p>	<p>Children to represent repeated subtraction pictorially.</p> 	<p>Abstract number line to represent the equal groups that have been subtracted.</p> 