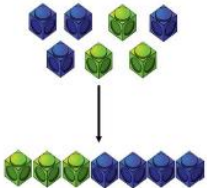
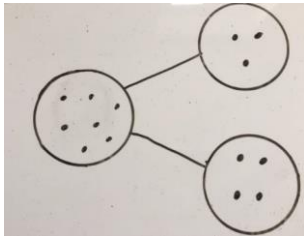
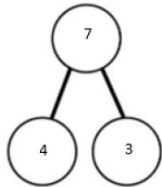
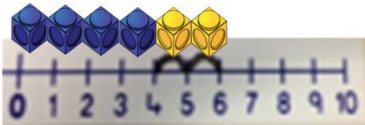
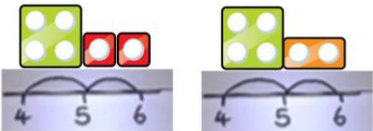
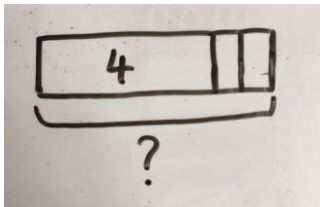





Haddenham St Mary's Calculation Policy - Addition

Concrete	Pictorial	Abstract
<p>Combining two parts to make a whole (use other resources too, e.g. 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>$4 + 3 = 7$</p> <p>Four is a part, 3 is a part and the whole is seven.</p> 
<p>Starting at the bigger number and counting on - using cubes</p>  <p>Or numicon....</p> 	<p>A bar model which encourages the children to count on, rather than count all.</p> 	<p>The abstract number line:</p> <p>What is 2 more than 4?</p> <p>What is the sum of 2 and 4?</p> <p>What is the total of 4 and 2?</p> <p>$4 + 2$</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.

$41 + 8$

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

Conceptual Variation - Different ways to ask children to solve calculations e.g. $21 + 34$

?	
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
 $+34$

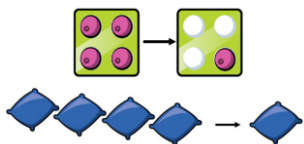
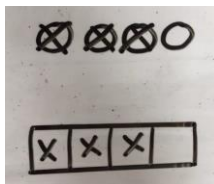
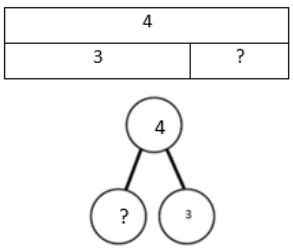
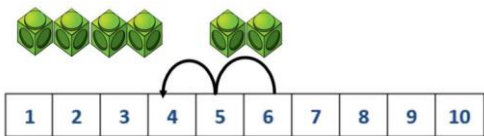
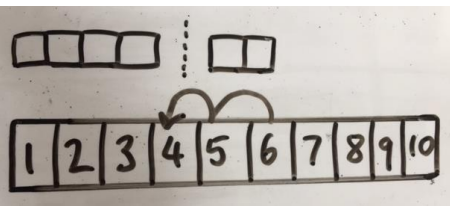
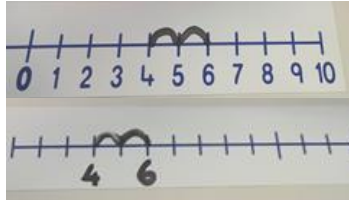
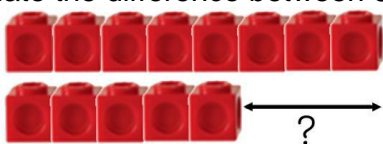
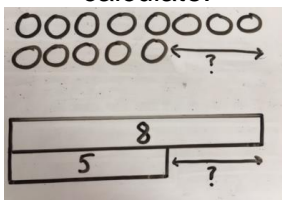
$21 + 34 =$
 $? = 21 + 34$

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

10s	1s
2	1
3	?
?	5

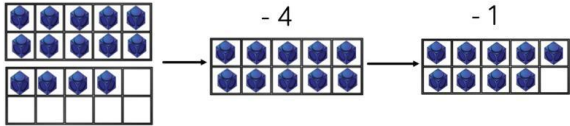


Haddenham St Mary's Calculation Policy - Subtraction

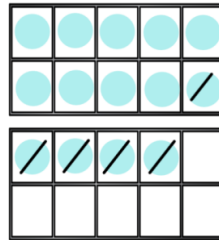
Concrete	Pictorial	Abstract
<p>Physically taking away and removing objects from a whole (ten frames, Numicon, cubes and other items such as beanbags could be used).</p> <p style="text-align: center;">$4 - 3 = 1$</p> 	<p>Children to draw the concrete resources they are using and cross out the correct amount. The bar model can also be used.</p> 	<p style="text-align: center;">$4 - 3 =$ $= 4 - 3$</p> 
<p>Counting back (using number lines or number tracks) children start with 6 and count back 2.</p> <p style="text-align: center;">$6 - 2 = 4$</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> 
<p>Finding the difference (using cubes, Numicon or Cuisenaire rods, other objects can also be used).</p> <p>Calculate the difference between 8 and 5.</p> 	<p>Children to draw the cubes/other concrete objects which they have used or use the bar model to illustrate what they need to calculate.</p> 	<p>Find the difference between 8 and 5. $8 - 5$, the difference is ?</p> <p>Children to explore why $9 - 6 = 8 - 5 = 7 - 4$ have the same difference.</p>

Making 10 using ten frames.

$$14 - 5$$



Children to present the ten frame pictorially and discuss what they did to make 10.



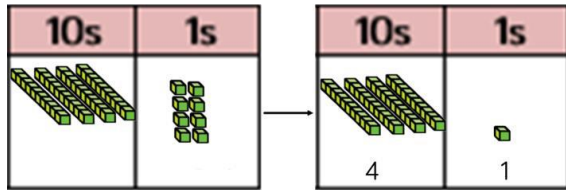
Children to show how they can make 10 by partitioning the subtrahend.

$$14 - 5 = 9$$

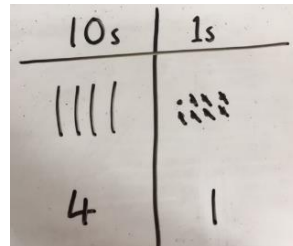
$$14 - 4 = 10$$

$$10 - 1 = 9$$

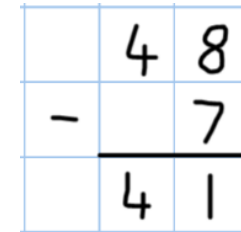
Column method using base 10. 48-7



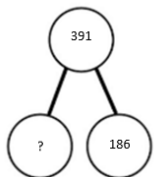
Children to represent the base 10 pictorially.



Column method or children could count back 7.



Conceptual Variation - Different ways to ask children to solve calculations e.g. 391+ 186



391	
186	?

Raj spent £391, Timmy spent £186.

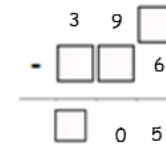
How much more did Raj spend?

Calculate the difference between 391 and 186.

$$? = 391 - 186$$

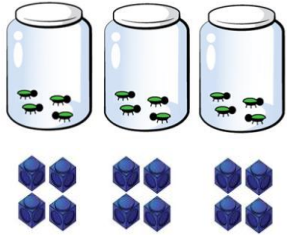
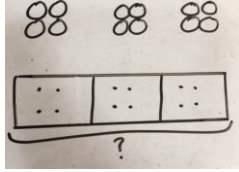
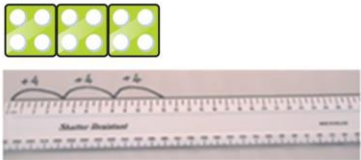
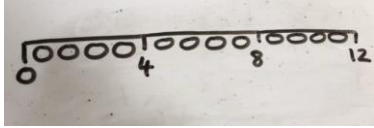
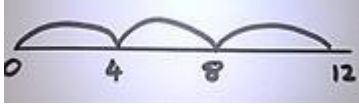
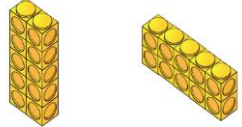
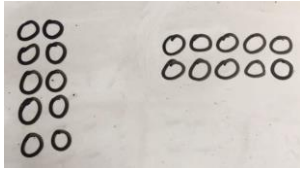
$$\begin{array}{r} 391 \\ -186 \\ \hline \end{array}$$

What is 186 less than 391?

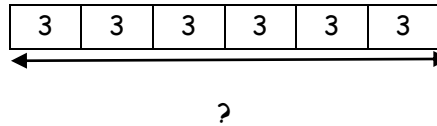




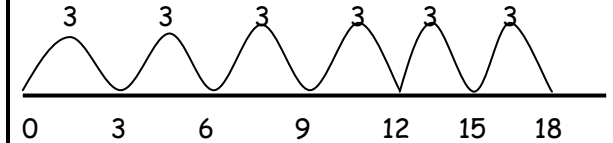
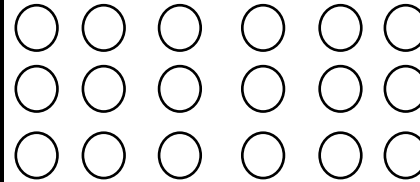
Haddenham St Mary's Calculation Policy - Multiplication

Concrete	Pictorial	Abstract
<p>Repeated grouping/repeated addition $3 \times 4 / 4 + 4 + 4$ 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 style="text-align: center;">$3 \times 4 = 12$</p> <p style="text-align: center;">$4 + 4 + 4 = 12$</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. $3 \times 4 = 12$</p> 
<p>Use arrays to illustrate commutativity counters and other objects can also be used. $2 \times 5 = 5 \times 2$</p>  <p style="text-align: center;">2 lots of 5 5 lots of 2</p>	<p>Children to represent the arrays pictorially.</p> 	<p>Children to be able to use an array to write a range of calculations e.g.</p> <p>$10 = 2 \times 5$ $5 \times 2 = 10$ $2 + 2 + 2 + 2 + 2 = 10$ $10 = 5 + 5$</p>

Conceptual variation; different ways to ask children to solve 6×3

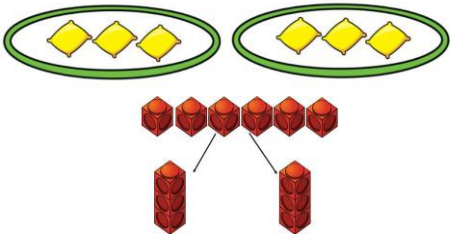
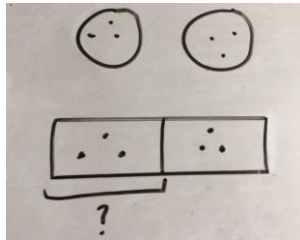
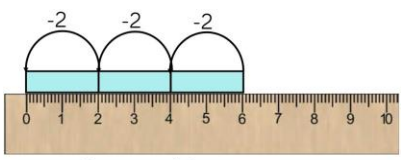
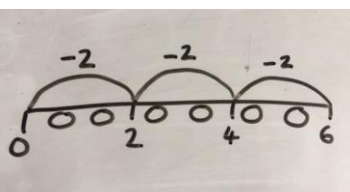
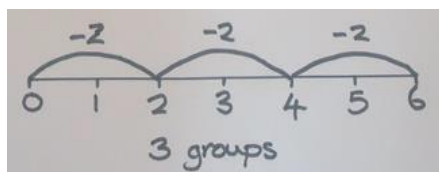

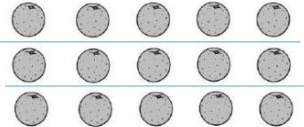


Mai had to swim 3 lengths, 6 times a week.
How many lengths did she swim in one week?
With the counters, prove that $6 \times 3 = 18$





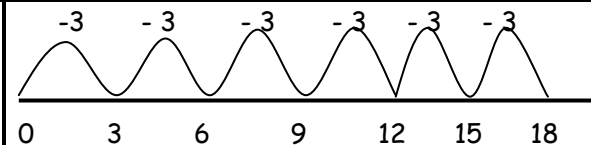
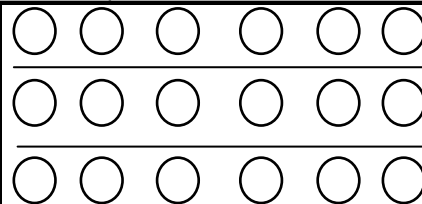
Haddenham St Mary's Calculation Policy - Division

Concrete	Pictorial	Abstract
<p style="text-align: center;">Sharing using a range of objects. $6 \div 2$</p> 	<p style="text-align: center;">Represent the sharing pictorially.</p> 	<p style="text-align: center;">$6 \div 2 = 3$</p> <div style="border: 1px solid black; display: flex; justify-content: space-around; width: 100%; height: 40px; margin: 10px 0;"> 3 3 </div> <p style="text-align: center;">Children should also be encouraged to use their 2 times tables facts.</p>
<p style="text-align: center;">Repeated subtraction using Cuisenaire rods above a ruler. $6 \div 2$</p>  <p style="text-align: center;">3 groups of 2</p>	<p style="text-align: center;">Children to represent repeated subtraction pictorially.</p> 	<p style="text-align: center;">Abstract number line to represent the equal groups that have been subtracted.</p>  <p style="text-align: center;">3 groups</p>
 <p style="text-align: center;">Link division to multiplication by creating an array and thinking about the number sentences that can be created. Eg $15 \div 3 = 5$ $5 \times 3 = 15$ $15 \div 5 = 3$ $3 \times 5 = 15$</p>	 <p style="text-align: center;">Draw an array and use lines to split the array into groups to make multiplication and division sentences.</p>	<p style="text-align: center;">Find the inverse of multiplication and division sentences by creating four linking number sentences.</p> <p style="text-align: center;">$7 \times 4 = 28$ $4 \times 7 = 28$ $28 \div 7 = 4$ $28 \div 4 = 7$</p>

Conceptual variation; different ways to ask children to solve $18 \div 3$

6	6	6
---	---	---

Mai swam 6 lengths each time she went swimming.
She swam 18 lengths one week?
How many times did she go swimming that week?



What is the calculation? What is the answer?