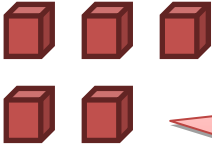



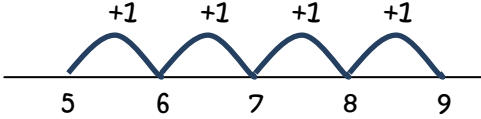




# Cherry Tree

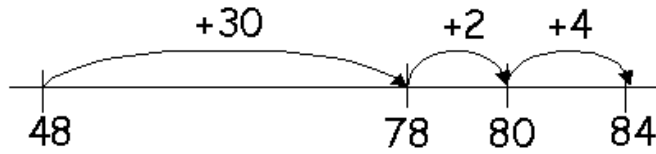
## Whole school policy for the teaching of written calculations.

### Systematic Teaching of Addition

Children working towards level 1 (in Reception and year 1)	<p>Children are taught to calculate additions practically using objects:</p>  <div style="border: 1px solid red; border-radius: 15px; padding: 10px; display: inline-block; margin-left: 100px;"> <p>Three and two make five altogether.</p> <p>Three add two equals five.</p> </div> <p>Children can then use and draw pictures to represent a calculation:</p>  <div style="border: 1px solid blue; border-radius: 15px; padding: 10px; display: inline-block; margin-left: 100px;"> <p>Three and one makes four.</p> </div>																								
Children working at level 1 (in years 1 and 2)	<p>Children can now record additions using appropriate symbols:</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <tr><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td>4</td><td>+</td><td>5</td><td>=</td><td>9</td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr> </table> <p>They are taught to put the biggest number in their heads and count the smaller number on their fingers:</p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;"> <div style="border: 1px solid red; border-radius: 15px; padding: 5px; display: inline-block;">5</div>   </div> <div style="text-align: center;"> <div style="border: 1px solid red; border-radius: 15px; padding: 5px; display: inline-block;">6, 7, 8, 9</div>   </div> </div> <p>Children then move on to using a number line to record these calculations:</p>  <p><i>*At this level children need to be confident in the various ways of making all numbers to 10. Eg: 7 = 1 + 6, 2 + 5, 3 + 4*</i></p>										4	+	5	=	9										
	4	+	5	=	9																				

Children working at level 2  
(usually in years 2 and 3)

Children begin to bridge through 10 on a number line to add together two-digit numbers: Eg:  $48 + 36$



*\*At this level children need to be confident in partitioning 2 and then 3 digit numbers in order to progress to expanded column method.\**

Children working at level 3  
(usually in years 3 and 4)

Children are taught to partition numbers before adding them together and recombining:

2	5	4	+	1	3	5	
2	0	0	+	5	0	+	4
1	0	0	+	3	0	+	5
3	0	0	+	8	0	+	9
				=	3	8	9

Moving on to less expanded methods including bridging 10:

	2	3	4
+	1	8	7
	3	0	0
+	1	1	0
+		1	1
	4	2	1

Children working at level 4 and beyond  
(usually in years 5 and 6)

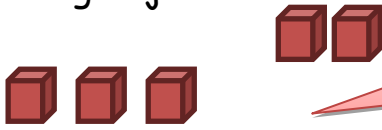
Children move on to the shortest method of column addition once they are confident of how and why they "carry" numbers into a different column.

	2	3	4
+	1	8	7
	<b>4</b>	<b>2</b>	<b>1</b>
	1	1	

## Systematic Teaching of Subtraction

Children working towards level 1  
(in Reception and year 1)

Children are taught to calculate subtractions practically using objects:



Five take away 2 leaves 3.

Children can then use and draw pictures to represent a calculation:

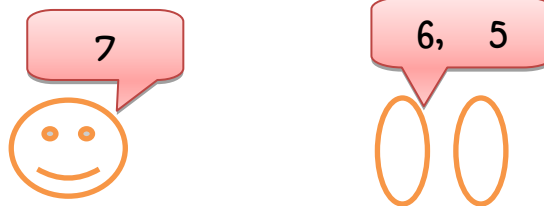


Four take away one leaves three.

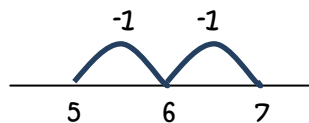
Children can now record subtractions using appropriate symbols:

	7	-	2	=	5	

They are taught to put the biggest number in their heads, the smaller number on their fingers, and count backwards:

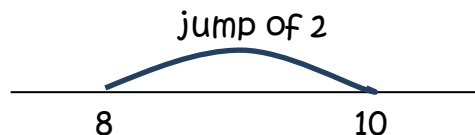


Children are also taught to count backwards on a number line, to show how the numbers reduce when subtracting:



Children begin to learn that counting up from the smaller number to the larger number is "finding the difference", and that this is the same as subtracting one number from another.

Eg  $10 - 8 = 2$

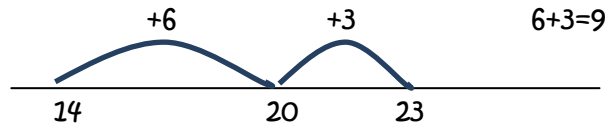


Children working at level 1  
(in years 1 and 2)

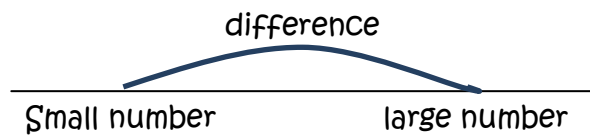
Children working at level 2  
(usually in years 2 and 3)

Counting backwards on a number line to find the answer to a subtraction is replaced at this level by using counting up to find the difference between the two numbers.

Eg:  $23 - 14$



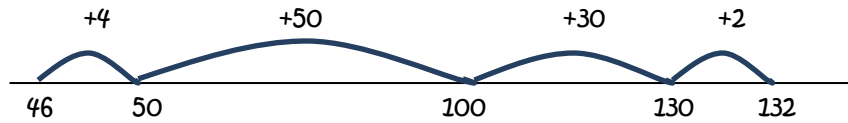
This model can then be used to generate 4 different addition and subtraction calculations.



Children working at level 3  
(usually in years 3 and 4)

At this level children will then begin to use a number line to calculate 2 and 3 digit subtractions by counting up.

Eg:  $132 - 46$



$$4 + 50 + 30 + 2 = 86$$

Usually during year 4, children are taught to use an expanded method of column subtraction:

9	6	-	4	3			
		9	0	+	6		
		-	4	0	+	3	
		5	0	+	3		
				=	5	3	

Children working at level 4 and beyond  
(usually in years 5 and 6)

Taught in year 5, children move on to a shorter method of column subtraction once they are confident of how and why they "carry" numbers into a different column.

Beginning with


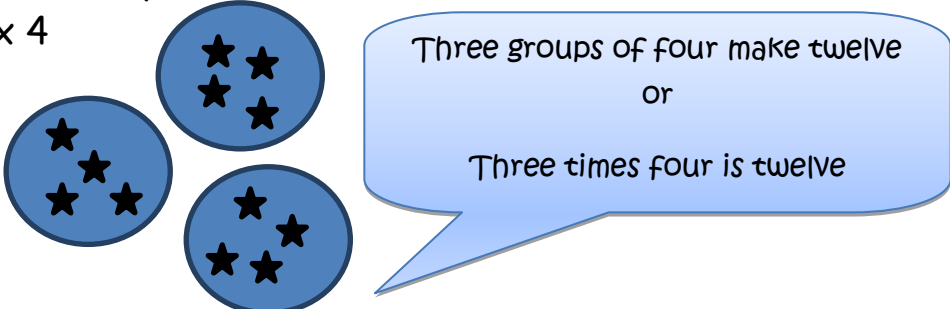
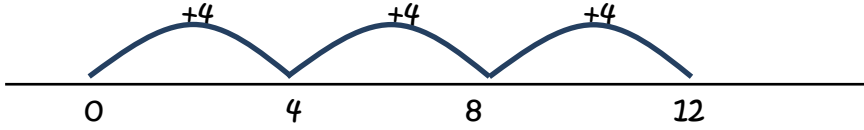
$$\begin{array}{r} 150 \\ 400 \quad 50 \quad 13 \\ 500 + 60 + 3 \\ - \underline{200 + 70 + 8} \\ 200 + 80 + 5 \end{array}$$

And moving onto:

$$\begin{array}{r} \overset{4}{5} \overset{15}{6} \overset{1}{3} \\ - \underline{2 \quad 7 \quad 8} \\ 2 \quad 8 \quad 5 \end{array}$$

\*The number line should be used throughout for money and time differences.\*

## Systematic Teaching of Multiplication

<p>Children working towards level 1 (in Reception and year 1)</p>	<p>During the first two years, children practise counting in groups of 2, 5 and 10.</p> <p>Doubles to 10+10 are also taught at this level.</p>																					
<p>Children working at level 1 (in years 1 and 2)</p>	<p>Children are taught to calculate multiplications practically using objects:</p>  <p>Children are also introduced to the x sign and may be able to record:</p> <table border="1" data-bbox="842 920 1345 1081"> <tbody> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td>3</td> <td>×</td> <td>2</td> <td>=</td> <td>6</td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>									3	×	2	=	6								
	3	×	2	=	6																	
<p>Children working at level 2 (usually in years 2 and 3)</p>	<p>In year 2, children use pictures and jottings to help them work out multiplication calculations:</p> <p>Eg: <math>3 \times 4</math></p>  <p>Children then begin to count up on a number line to solve these calculations:</p>  <p><i>*At this level children begin to learn tables by heart to aid more complex multiplication in the future.*</i></p>																					

Children working at level 3  
(usually in years 3 and 4)

Children who are developing knowledge of tables will now begin to partition two-digit numbers to multiply them.

1	3	x	4			
1	0	x	4	=	4	0
	3	x	4	=	1	2
					5	2

In year 4, children will be introduced to the grid method of multiplication by partitioning:

2	4	x	3	6			
			2	0			4
3	0	6	0	0	1	2	0
	6	1	2	0		2	4
	7	2	0	+	1	4	4
				=	8	6	4

Children working at level 4 and beyond  
(usually in years 5 and 6)

By year 6, children are taught to use the column method of multiplication:

$$\begin{array}{r}
 549 \\
 \times 6 \\
 \hline
 54 \\
 240 \\
 \hline
 3000 \\
 3294
 \end{array}$$

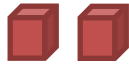
\*This may be refined to a compact method for level 5 and 6 children.\*



## Systematic Teaching of Division

Children working towards and at level 1  
(in reception and year 1)

During reception and year 1, children are taught to share items practically.

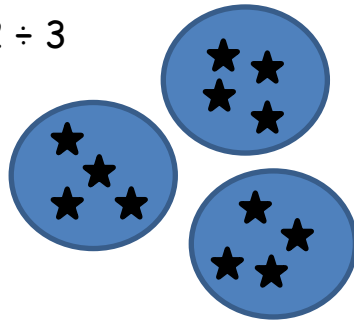


Four shared between 2 makes 2 each.

Children working at level 2  
(usually in years 2 and 3)

Children then move on to pictorial sharing using jottings to find the answers to division problems.

Eg:  $12 \div 3$



Twelve shared between three is four each.

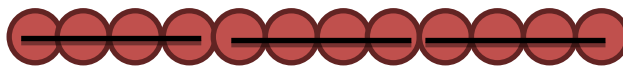
Children can also use the notation:

1	2	÷	2	=	6	

They also use this pictorial system and wording to help them make the connection between division and repeated subtraction:

Eg:  $12 \div 4$

12 grouped into 4s makes 3 groups.

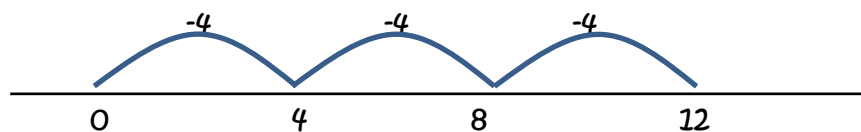


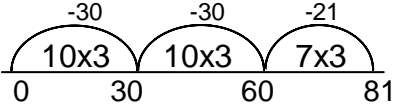
This method can also be used to introduce a pictorial concept of remainders.

*\*At this level children begin to learn tables and corresponding division facts by heart to aid more complex multiplication in the future.\**

Children working at level 3  
(usually in years 3 and 4)

Children then begin to count back on a number line to solve these calculations, including those with remainders:



<p>Children working at level 4 (usually in years 4, 5 and 6)</p>	<p>At this level, children learn to count back by "chunking" Eg: <math>81 \div 3</math></p>  <p style="text-align: right;"><math>10 + 10 + 7 = 27</math></p> <p>Move on to vertical chunking. <math>132 \div 6 = 22</math></p> $  \begin{array}{r}  132 \\  - \underline{60} \quad (10 \times 6) \\  72 \\  - \underline{60} \quad (10 \times 6) \\  12 \\  - \underline{12} \quad (2 \times 6) \\  \hline  \end{array}  $ <p>*Then refine to subtract larger "chunks".*</p>
<p>Children working at level 5 (usually in year 6)</p>	<p>Children working at the highest level will progress onto using short division: Eg: <math>284 \div 6</math></p> $  \begin{array}{r}  47r2 \\  6 \overline{) 284} \\  \underline{24} \phantom{0} \\  44 \\  \underline{42} \\  20 \\  \underline{18} \\  20 \\  \underline{18} \\  2  \end{array}  $