

**FLASH LEY COMMUNITY
PRIMARY SCHOOL &
NURSERY**

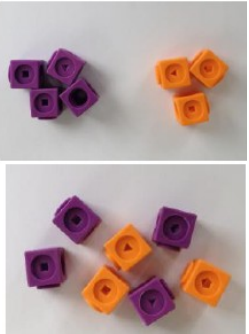
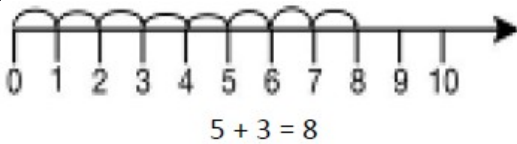
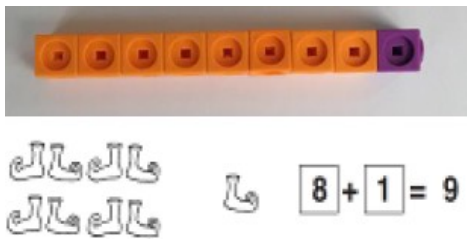
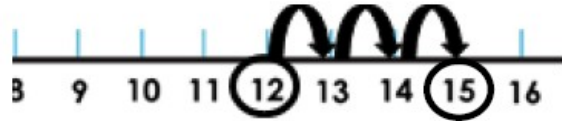
CALCULATION POLICY

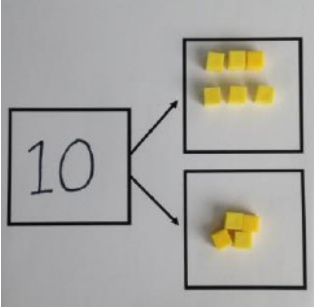
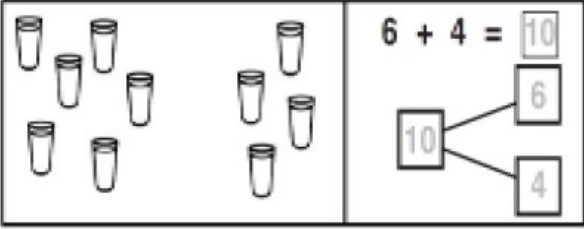
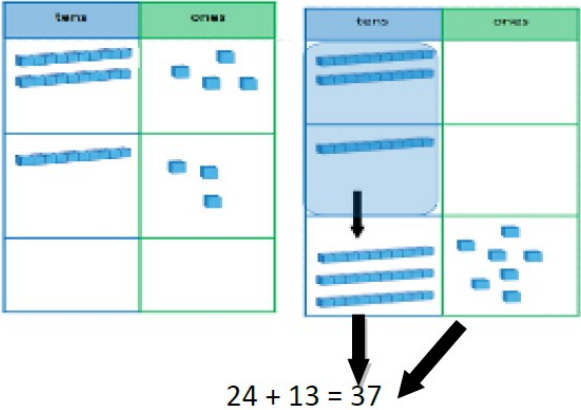

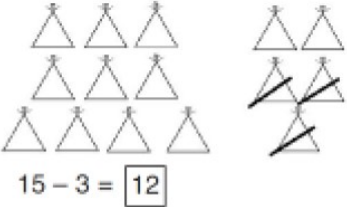
Produced By Mrs G Barfoot

Flash Ley Calculation Policy

This policy has been developed to show the progression of calculations from Year 1-6. Years 1-3 are based on Mathematics Mastery calculations and procedures and Years 4-6 is centred round White Rose calculations.

Year 1

	Objective	Concrete	Pictorial	Abstract
Addition	Count all - Joining two groups and then recounting all objects using one to one correspondence			$3 + 4 = 7$
	Counting on - Count on from the greater number			$8 + 1 = 9$

	<p>Part-part-whole Develops children's understanding of commutative calculations</p>			$10 = 6 + 4$ $10 - 6 = 4$ $10 - 4 = 6$ $10 = 4 + 6$
	<p>Partition to add (no regrouping) Use place value grids and dienes to represent the equation. This is in preparation for column addition</p>		$24 + 13 = 37$	
<p>Subtraction</p>	<p>Take away from the ones</p>	<p>Use physical objects, counters, cubes etc. to show how objects can be taken away.</p> <p>$4 - 2 = 2$</p> 		$8 - 4 = 4$

Counting back

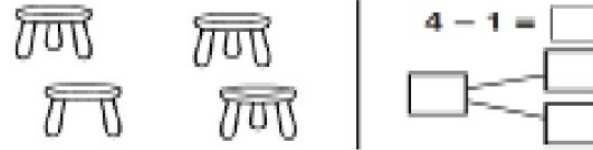
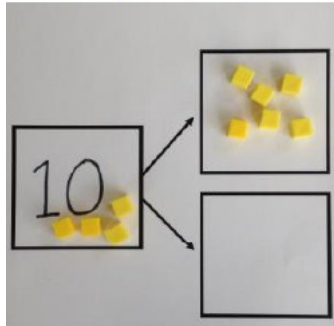
$$16 - 2 = 14$$



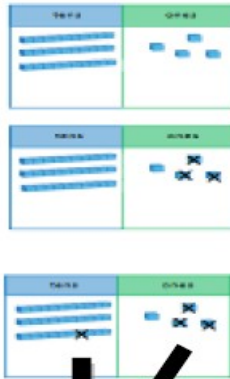
$$16 - 2 = 14$$

Part-part-whole

$$10 - 6 = 4$$




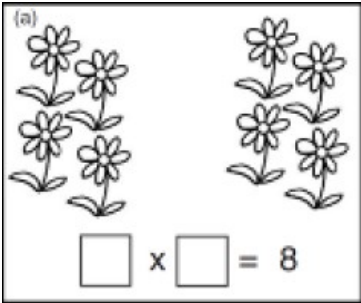
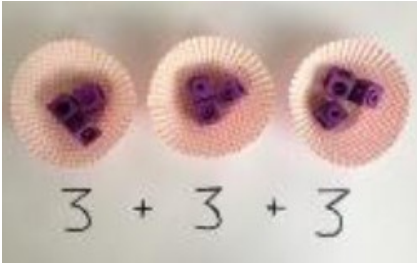
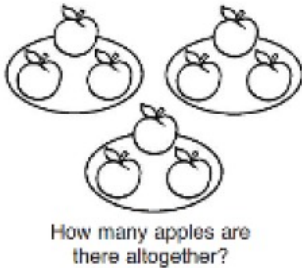





Partitioning to subtract with no regrouping



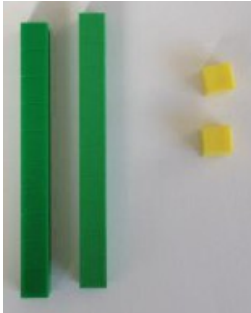



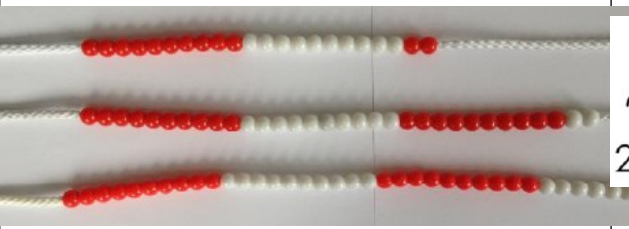

$$34 - 13 = 21$$

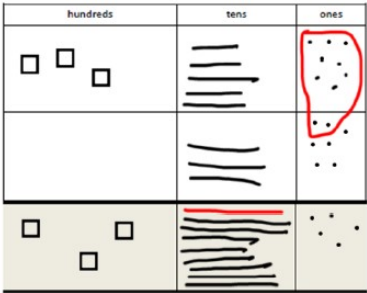

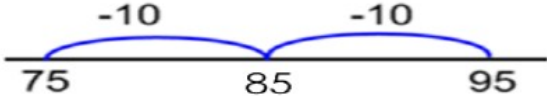



$$34 - 13 = 21$$

	Skip counting in multiples of 2, 5 and 10 from 0	 	$4 \times 5 = 20$ $2 \times 4 = 8$	
Multiplication	Making equal groups and counting the total			$2 \times 3 = 6$
	Solve multiplication with repeated addition			$3 + 3 + 3 = 9$
Division	Share objects into groups	 	<p>There are 10 sweets. Ring groups of 2.</p>  <p>There are _____ groups of 2.</p>	$10 \div 2 = 5$

Year 2

Beginning of Year 2 recaps strategies taught in Year 1

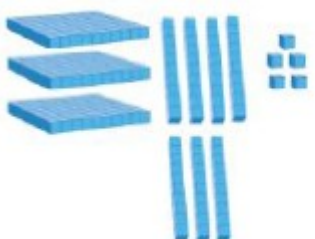
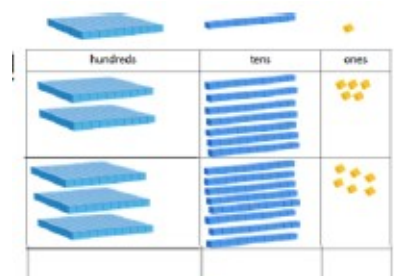
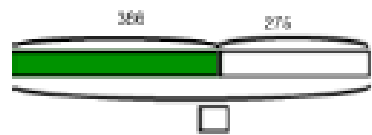
	Objective	Concrete	Pictorial	Abstract
Addition	Using known facts to create derived facts		  	$3 + 4 = 7$ <i>leads to</i> $30 + 40 = 70$ <i>leads to</i> $300 + 400 = 700$
	Partitioning one number, then adding tens and			$22 + 17 = 39$


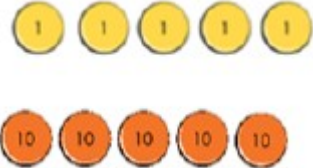
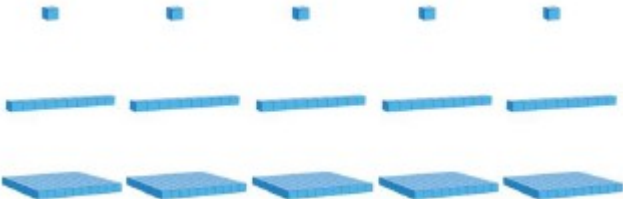
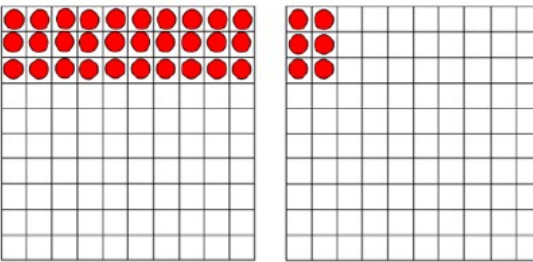






	ones															
	Column method with regrouping			<table border="1"> <thead> <tr> <th>hundreds</th> <th>tens</th> <th>ones</th> </tr> </thead> <tbody> <tr> <td>3</td> <td>5</td> <td>8</td> </tr> <tr> <td></td> <td>3</td> <td>7</td> </tr> <tr> <td>3</td> <td>9</td> <td>5</td> </tr> </tbody> </table>	hundreds	tens	ones	3	5	8		3	7	3	9	5
hundreds	tens	ones														
3	5	8														
	3	7														
3	9	5														
Subtraction	Counting back in multiples of ten and one			$95 - 20 = 75$												
	Using known number facts to create derived facts			$8 - 4 = 4$ <i>leads to</i> $80 - 40 = 40$ <i>leads to</i> $800 - 400 = 400$												
	Subtracting tens and ones			$53 - 12 = 41$												

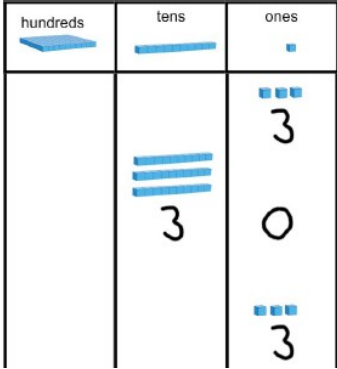
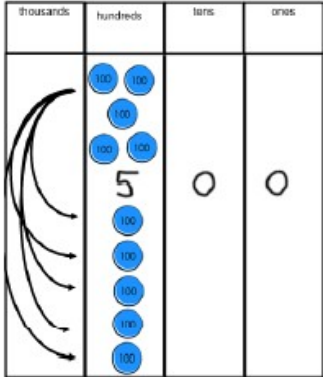
	Partitioning to subtract		$263 - 121 = 142$
Multiplication	Arrays to represent multiplication equations		$2 \times 10 = 20$ $3 \times 5 = 15$
	Multiplication is commutative		$12 = 3 \times 4$ $12 = 4 \times 3$
Division	Division as sharing		$10 \div 2 = 5$
	Division as grouping		$10 \div 2 = 5$

Year 3


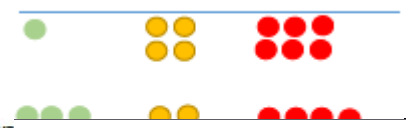
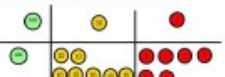

Beginning of Year 3 recaps strategies taught in Year 2.

	Objective	Concrete	Pictorial	Abstract								
Addition and subtraction	Add and subtract numbers mentally		<p style="color: red;">I know $4 + 3 = 7$, so 4 tens plus 3 tens is equal to 7 tens.</p> <p style="color: red;">$345 + 30 = 375$.</p>	$345 + 30$ $274 - 50$ $1128 + 300$ $1312 - 300$ $326 + 342$ $856 - 724$								
	Written column method for written calculations that require regrouping			<table border="1" style="margin-left: auto; margin-right: auto;"> <tr><td>2</td><td>7</td><td>5</td></tr> <tr><td>+3</td><td>8</td><td>6</td></tr> <tr><td> </td><td> </td><td> </td></tr> </table>	2	7	5	+3	8	6		
2	7	5										
+3	8	6										

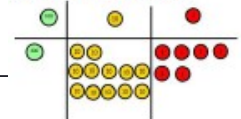
	g with up to 4 digits														
	Find 10, 100 more or less than a given number			$142 + 100 = 242$											
Multiplication	Multiply by 10 and 100			$5 \times 1 = 5$ $5 \times 10 = 50$											
	Using known facts for multiplying by multiples of 10 and 100			$5 = 1 \times 5$ $50 = 10 \times 5$ $500 = 100 \times 5$											
	Multiplication of 2 digit numbers with partitioning	 <p style="text-align: center;">Now add the total number of tens and ones</p>	<table border="1" style="display: inline-table; margin-right: 20px;"> <tr><td>x</td><td>10</td><td>2</td></tr> <tr><td>3</td><td></td><td></td></tr> </table> <table border="1" style="display: inline-table;"> <tr><td>x</td><td>10</td><td>2</td></tr> <tr><td>3</td><td>30</td><td>6</td></tr> </table>	x	10	2	3			x	10	2	3	30	6
x	10	2													
3															
x	10	2													
3	30	6													

Division	Dividing multiples of 10, 100 and 1000 by 10, 100 and 1000 using scaling down		$3 \times 10 = 30$ $30 \div 10 = 3$
	Dividing multiples of 10, 100 and 1000 by 10, 100 and 1000 using grouping		$500 \div 100 = \square$ My whole is 500 and the value of the equal parts is 100. How many parts are there?

Year 4

	Objective	Concrete	Pictorial	Abstract
Addition	Column method with regrouping	<p>Make both numbers on a place value grid.</p>  <p>146</p>	<p>100s 10s 1s</p> 	$100 + 40 + 6$ $500 + 20 + 7$ $600 + 70 + 3 = 673$
Subtraction	Column method with regrouping	<p>Now look at the tens, can I take away tens easily? I need to exchange 1 hundred for 10 tens.</p>  <p>Calculations</p> $\begin{array}{r} 234 \\ - 88 \\ \hline \end{array}$		<p>As the children progress, they will move</p> <p>Calculations</p> $\begin{array}{r} 234 \\ - 88 \\ \hline \end{array}$

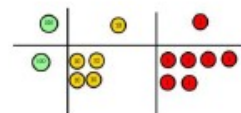
Now look at the tens, can I take away tens easily? I need to exchange 1 hundred for 10 tens.



Calculations

$$\begin{array}{r} 234 \\ - 88 \\ \hline \end{array}$$

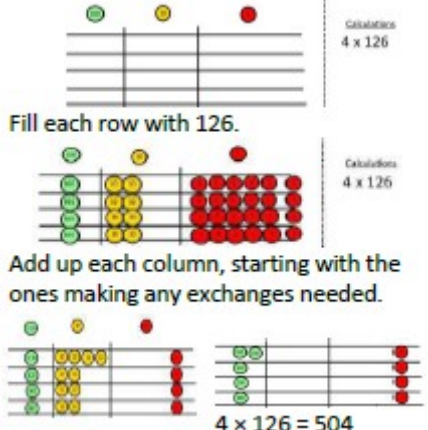
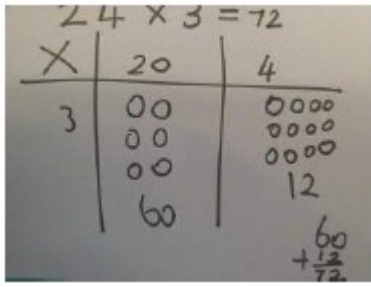
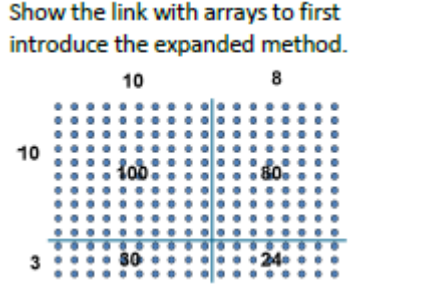
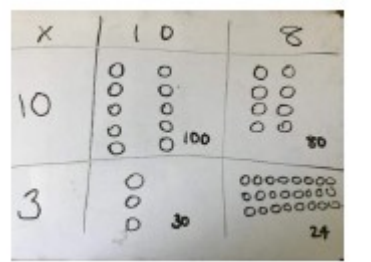


Now I can take away 8 tens and complete my subtraction.





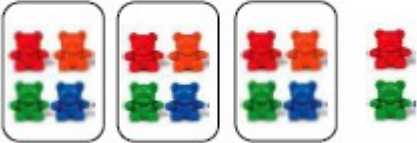


Calculations

$$\begin{array}{r} 234 \\ - 88 \\ \hline 146 \end{array}$$

Show children how the concrete method links to the written method alongside using number lines. Copy out the number lines.

Multiplication	Grid method	 <p>Calculations 4×126</p> <p>Fill each row with 126.</p> <p>Calculations 4×126</p> <p>Add up each column, starting with the ones making any exchanges needed.</p> <p>$4 \times 126 = 504$</p>		<table border="1" data-bbox="1657 127 1993 287"> <thead> <tr> <th>X</th> <th>1000</th> <th>300</th> <th>40</th> <th>2</th> </tr> </thead> <tbody> <tr> <td>10</td> <td>10000</td> <td>3000</td> <td>400</td> <td>20</td> </tr> <tr> <td>8</td> <td>8000</td> <td>2400</td> <td>320</td> <td>16</td> </tr> </tbody> </table>	X	1000	300	40	2	10	10000	3000	400	20	8	8000	2400	320	16
	X	1000	300	40	2														
10	10000	3000	400	20															
8	8000	2400	320	16															
Expanded method	<p>Show the link with arrays to first introduce the expanded method.</p> 		<p>Start with long multiplication, reminding the children about lining up their numbers clearly in columns.</p> $\begin{array}{r} 18 \\ \times 13 \\ \hline 24 \text{ (3 x 8)} \\ 30 \text{ (3 x 10)} \\ \hline 80 \text{ (10 x 8)} \\ 100 \text{ (10 x 10)} \\ \hline 234 \end{array}$																
Division	<p>Use place value counters to divide using the short division method alongside.</p> <p>$96 \div 3$</p> 	<p>Students can continue to use drawn diagrams with dots or circles to help them divide numbers into equal groups.</p> 	<p>Begin with divisions that divide equally with no remainder.</p> $\begin{array}{r} 218 \\ \hline \end{array}$																

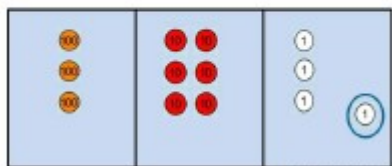
Year 5/6

	Objective	Concrete	Pictorial	Abstract
Addition	Column method with regrouping	Consolidate understanding of column addition with regrouping from Year 4 using numbers with more than four digits and extend by adding numbers with up to 3 decimals		
Subtraction	Column method with regrouping	Consolidate understanding of column subtraction with regrouping from Year 4 using numbers with more than four digits and extend by adding numbers with up to 3 decimals		
Multiplication	Compact method	<p>Children can continue to be supported by place value counters at the stage of multiplication.</p> 	<p>Bar modelling and number lines can support learners when solving problems with multiplication alongside the formal written methods.</p> 	<p>Start with long multiplication, reminding the children about lining up their numbers clearly in columns. If it helps, children can write out what they are solving next to their answer.</p>
Division	Division with remainders	<p>$14 \div 3 =$ Divide objects between groups and see how much is left over</p> 	<p>Jump forward in equal jumps on a number line then see how many more you need to jump to find a remainder.</p>  <p>Draw dots and group them to divide an amount and clearly show a remainder.</p> 	<p>Complete written divisions and show the remainder using r.</p> $29 \div 8 = 3 \text{ REMAINDER } 5$ <p>↑ ↑ ↑ ↑ dividend divisor quotient remainder</p>

Short
division
with
remainders

$$364 \div 3 =$$

$$\begin{array}{r} 121 \text{ rem } 1 \\ 3 \overline{) 364} \end{array}$$



Move onto divisions with a remainder.

Once children understand remainders,

$$\begin{array}{r} 86 \text{ r } 2 \\ 5 \overline{) 432} \end{array}$$

begin to
express as a
fraction or
decimal

according to the context.

$$\begin{array}{r} 186 \frac{1}{5} \\ 5 \overline{) 931} \end{array}$$

$$\begin{array}{r} 14.6 \\ 35 \overline{) 511.0} \end{array}$$