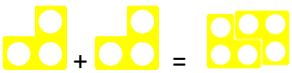

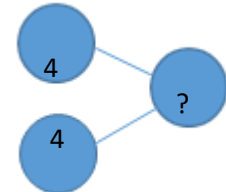

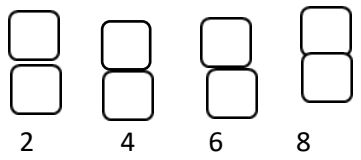


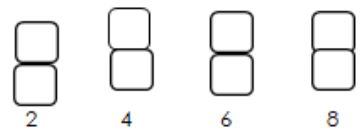





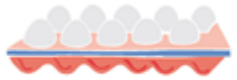

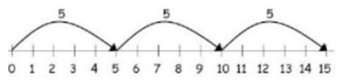


Progression in Calculation – Multiplication

Foundation Stage			
Objective & Strategy	Concrete	Pictorial	Abstract
Solve problems including doubling	<p>Find the same amount again with apparatus</p>  <p>Then with counters or cubes</p>	<p>Draw the same amount again</p>  <p>(Work towards organising ones as numicon)</p> <p>Show as part-part-whole model too</p>	<p>Use part- part – whole method, showing 2 equal parts alongside concrete and pictorial examples</p> 
solve practical problems that involve combining groups of 2, 5 or 10,		<p>Children draw and label</p> 	<p>Place manipulatives alongside a number track</p> 
Year 1			
Counting in multiples Of 5, 2s and 10s	 <p>Count in multiples supported by concrete objects</p> <p>in equal groups</p>		 <p>2, 4, 6, __, 10</p> <p>5, 10, 15, 20, 25 , 30, __</p> <p>50, 45, __, 35, 30</p>

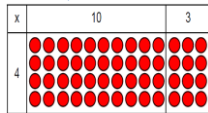
<p>Multiplication as repeated addition</p>	<p>$5 + 5 + 5 =$</p> 	<p>There are 3 plates. Each plate has 2 star biscuits on. How many biscuits are there?</p>  <p>2 add 2 add 2 equals 6</p>	 <p>$2 + 2 + 2 + 2 + 2 = 10$</p> <p>5 groups of 2 = 10</p>
<p>Multiplication using arrays</p>	 <p>Arrange groups as rows and then arrays to show multiplication</p> <p>This is 3 lots of 5</p>	<p>Draw the apparatus in arrays</p> <p>X X X X X X X X X X X X X X X X X X</p> <p>$5 + 5 + 5 = 15$</p>	<p>Introduce X as 'groups of'</p> <p>$3 \times 5 = 15$</p>
<p>Year 2</p>			
<p>Arrays- showing commutative multiplication</p>	<p>Create arrays using counters/cubes to show multiplication sentences.</p>  <p>$5 \times 2 = 10$</p> <p>$2 \times 5 = 10$</p> 	<p>Draw arrays in different rotations to find commutative multiplication sentences.</p> <p>XX XX XX XX = XXXX XXXX</p> <p>$2 \times 5 = 10$ $5 \times 2 = 10$</p> <p>Also $10 = 2 \times 5$ $10 = 5 \times 2$</p>	<p>Use an array to write multiplication sentences and reinforce repeated addition.</p>  <p>$5 + 5 + 5 = 15$ $3 + 3 + 3 + 3 + 3 = 15$ $3 \times 5 = 15$ $5 \times 3 = 15$</p>

Year 3 and 4

**Multiplication
(Progression to more
formal methods)**

Children can choose their preferred apparatus to use when multiplying. 2 digit x 1 digit numbers would be modelled similar to the array:

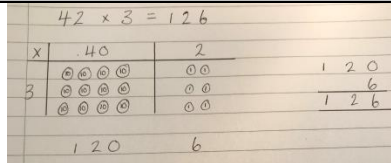
e.g. $13 \times 4 =$
4 rows of 10
4 rows of 3



This will represent the answer of 52.
This will progress to a more compact method as shown below:

x	T	U
1	3	2
4	12	12
	52	

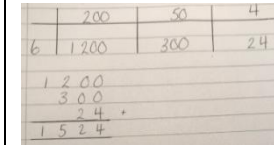
4 rows of 13 combining to show 52.



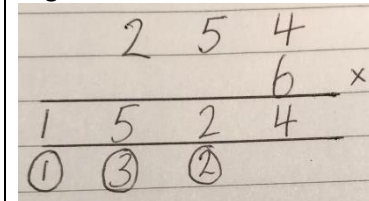
Children will then be encouraged to represent their work using any picture which they feel most confident with (Base 10 or Place value counters).

Children could use different colours for the values or write in the values to represent their answers.

Children can become more abstract in using the grid method as shown below:



When introducing the more formal methods of multiplication, they should be taught together so children can identify the links:



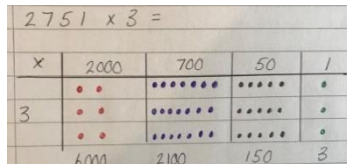
Year 5 and 6

**Multiplication
(Formal method)**

$2751 \times 3 =$
Place value counters are probably best at this stage. Sticking with making rows in the correct place value as shown below:



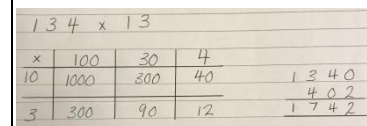
$2751 \times 3 =$

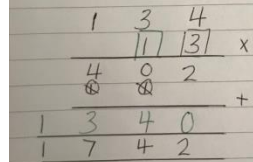


Children are encouraged to use different coloured counters to represent the different values.

$134 \times 13 =$

When introducing the formal methods to multiply larger numbers, children are encouraged to make the link between the grid method and the more formal methods shown below:



	<p>Children will then be encouraged to bring each value together and total the different amounts, writing them down as they go. E.g.</p> $3 \times 2000 = 6000$ $3 \times 700 = 2100$ $3 \times 50 = 150$ $3 \times 1 = 3$ <p>Children will draw on taught addition methods to calculate the final answer of 7253.</p>	<p>As they create the different 'lots of' they are encourage to put the total at the bottom.</p> <p>Children will then use the addition methods to calculate the total after completing each value se</p>	<p>Discussions and explanations for multiplying by a number which is 10, 100, 1000 etc. is discussed when using the method shown below:</p> 
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