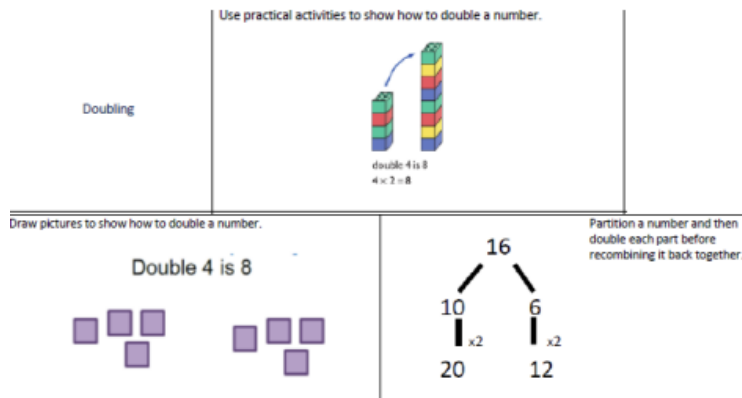
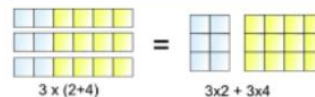
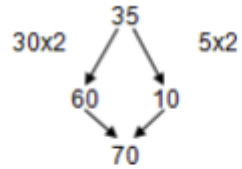
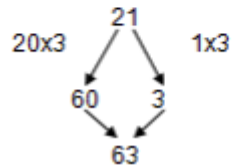


Year 3 and 4 multiplication	
Year 3	Year 4
Mental strategies	
<p>Children should continue to count regularly, on and back, now including multiples of 4, 8, 50, and 100, and steps of tenths. The number line should continue to be used as an important image to support thinking, and the use of informal jottings and drawings to solve problems should be encouraged. Demonstrating multiplication on a number line – jumping in larger groups of amounts $13 \times 4 = 10$ groups $4 = 3$ groups of 4 Children should practise times table facts using teaching strategies such as: singing tables, table ITP, promote patterns including doubling for 2's, 4's and 8's identifying table facts for instant recall.</p> <p>Doubles are same as $\times 2$. Vocabulary of double, multiply, groups of, sets of, lots of etc. Concrete, pictorial abstract</p> <div style="text-align: center;">  <p>Use practical activities to show how to double a number.</p> <p>Double 4 is 8</p> <p>Partition a number and then double each part before recombining it back together.</p> </div> <p>Draw pictures to show how to double a number. Partitioning strategy for doubling</p>	<p>Children should continue to count regularly, on and back, now including multiples of 6, 7, 9, 25 and 1000, and steps of hundredths. Become fluent and confident to recall all tables to $\times 12$ Use the context of a week and a calendar to support the 7 times table (e.g. how many days in 5 weeks?)</p> <p>Multiply 3 numbers together The number line should continue to be used as an important image to support thinking, and the use of informal jottings should be encouraged. They should be encouraged to choose from a range of strategies:</p> <ul style="list-style-type: none"> - Partitioning using $\times 10$, $\times 20$ etc - Doubling to solve $\times 2$, $\times 4$, $\times 8$ - Recall of times tables - Use of commutativity of multiplication. <p>Approximate first.</p> <p>Partitioning / distributive law, e.g. 28×4 can be split up into 25×4 add 3×4 or 30×4 subtract 2×4.</p> <div style="border: 1px solid #ccc; padding: 10px; background-color: #f0f8ff;"> <p style="text-align: center;">Distributive Law more ...</p> <p>The Distributive Law says that multiplying a number by a group of numbers added together is the same as doing each multiplication separately</p> <p>Example: $3 \times (2 + 4) = 3 \times 2 + 3 \times 4$</p> <p>So the "3" can be "distributed" across the "2+4" into 3 times 2 and 3 times 4.</p> <div style="text-align: center;">  <p>$3 \times (2+4) = 3 \times 2 + 3 \times 4$</p> </div> </div>

Double 35:



A lolly costs 21p. How much do 3 cost?



Informal recording of partitioned numbers

$15 \times 5 = 75$

$10 \times 5 = 50$

$5 \times 5 = 25$

$27 \times 3 = 81$

$20 \times 3 = 60$

$7 \times 3 = 21$

“20 multiplied by 3 equals 60 and 7 multiplied by 3 equals 21. 60 add 21 equals 81.”

Pupils to explain the effect of multiplying by 10 and 100.

Addition to be done mentally.

HTU and TU x U.

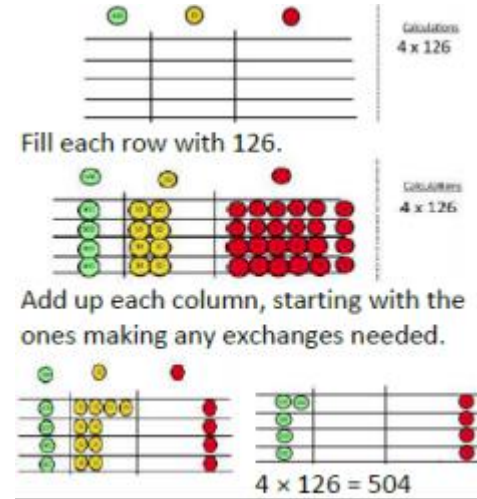
Record using expanded notation of the grid and expanded short multiplication.

346×9

x	300	40	6
9			

$$\begin{array}{r}
 346 \\
 \times 9 \\
 \hline
 54 \text{ (9 x 6)} \\
 360 \text{ (9 x 40)} \\
 2700 \text{ (9 x 300)} \\
 \hline
 3114 \\
 ||
 \end{array}$$

Use place value counters to show how we are finding groups of a number. We are multiplying by 4 so we need 4 rows.



Calculations
 4×126

Fill each row with 126.

Calculations
 4×126

Add up each column, starting with the ones making any exchanges needed.

Calculations
 $4 \times 126 = 504$

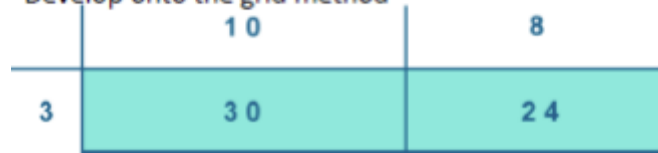
Written methods

Written methods (progressing to 2d x 1d)

Developing written methods using understanding of visual images



Develop onto the grid method



$18 \times 3 =$

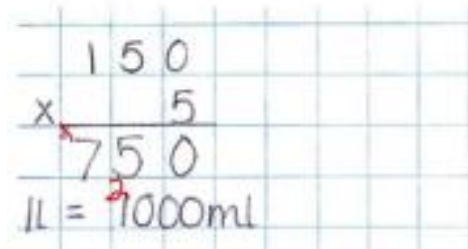
$10 \times 3 = 30$

$8 \times 3 = 24$

Start with multiplying by one digit numbers and showing the clear addition alongside the grid. Children can represent the work they have done with arrays in a way that they understand. Give children opportunities to explore this and deepen understanding using Dienes apparatus and place value counters – this equipment is differentiation of conceptual understanding.

Short multiplication with compact notation to be introduced once the expanded method is secure.

A bottle holds 1 litre of lemonade.
Rachel fills 5 glasses with lemonade.
She puts 150 millilitres in each glass.
How much lemonade is left in the bottle?

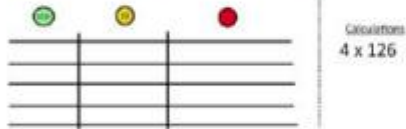


See below – children need to be exposed to a variety. The place value counters are more abstract. They can be asked, ‘what’s the same? What’s different?’

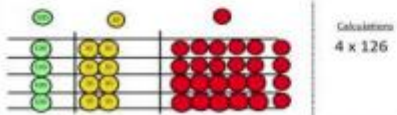
X	T	U
	██████████	□□□□
	██████████	□□□□
	██████████	□□□□
	██████████	□□□□

4 rows of 13

Move on to place value counters to show how we are finding groups of a number. We are multiplying by 4 so we need 4 rows.



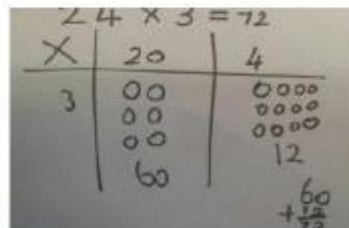
Fill each row with 126.



Add up each column, starting with the ones making any exchanges needed.

Children can represent the work they have done with place value counters in a way that they understand.

They can draw the counters, using colours to show different amounts or just use circles in the different columns to show their thinking as shown below.



Progressing to formal written methods.

Practical equipment and images need to be used alongside this methods to ensure conceptual understanding.



$\underline{x 8}$ 24 (8 x3) $\underline{160}$ (8 x20) 184	
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