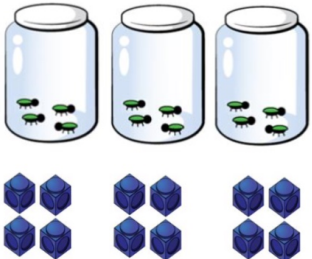
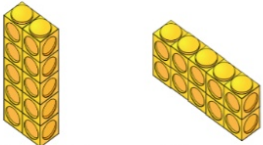
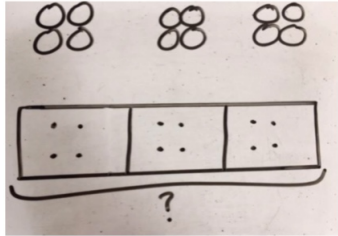
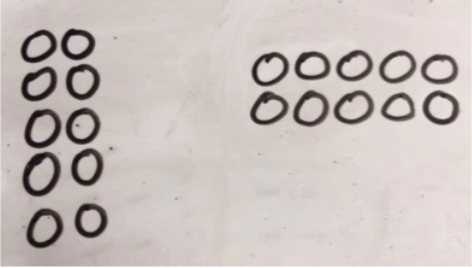


ALVERTON CALCULATION POLICY - MULTIPLICATION

EYFS/Year 1	Year 2	Year 3										
<p>Counting in 2s, 5s and 10s.</p> <p>Find doubles to double 6 using fingers.</p>	<p>Counting in 2s, 5s and 10s.</p> <p>Begin to know doubles of multiples of 5 to 100.</p>	<p>Count in 2s, 3s, 4s, 5s 8s and 10s.</p> <p>Find doubles to double 50.</p> <p>Use partitioning to double numbers. Eg $18 \times 2 = 10 \times 2 + 8 \times 2$</p>										
<p>Repeated grouping/repeated addition 3×4 $4 + 4 + 4$ There are 3 equal groups, with 4 in each group.</p> 	<p>Use arrays to illustrate commutativity counters and other objects can also be used. $2 \times 5 = 5 \times 2$</p>  <p>2 lots of 5 5 lots of 2</p>	<p>Formal column method with place value counters (base 10 can also be used.) 3×23</p> <table border="1" data-bbox="1509 742 1711 917"> <thead> <tr> <th>10s</th> <th>1s</th> </tr> </thead> <tbody> <tr> <td>● ● ● ●</td> <td>● ● ● ● ● ● ● ● ● ●</td> </tr> <tr> <td>6</td> <td>9</td> </tr> </tbody> </table>	10s	1s	● ● ● ●	● ● ● ● ● ● ● ● ● ●	6	9				
10s	1s											
● ● ● ●	● ● ● ● ● ● ● ● ● ●											
6	9											
<p>Children to represent the practical resources in a picture and use a bar model.</p> 	<p>Children to represent the arrays pictorially.</p> 	<p>Children to represent the counters pictorially.</p> <table border="1" data-bbox="1456 1050 1675 1270"> <thead> <tr> <th>10s</th> <th>1s</th> </tr> </thead> <tbody> <tr> <td>oo</td> <td>ooo</td> </tr> <tr> <td>oo</td> <td>ooo</td> </tr> <tr> <td>oo</td> <td>ooo</td> </tr> <tr> <td>6</td> <td>9</td> </tr> </tbody> </table>	10s	1s	oo	ooo	oo	ooo	oo	ooo	6	9
10s	1s											
oo	ooo											
oo	ooo											
oo	ooo											
6	9											

$$3 \times 4 = 12$$

$$4 + 4 + 4 = 12$$

Children to be able to use an array to write a range of calculations e.g.

$$10 = 2 \times 5$$

$$5 \times 2 = 10$$

$$2 + 2 + 2 + 2 + 2 = 10$$

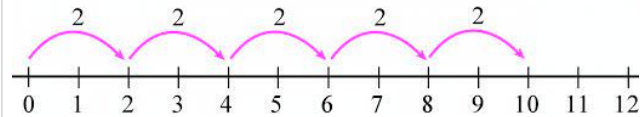
$$10 = 5 + 5$$

This leads onto the grid method

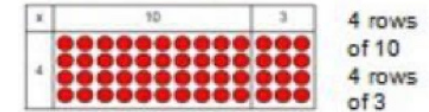
Repeated jumps on number line

Moving to jumps on unmarked number line

Jumps only done in 2s 5s and 10s

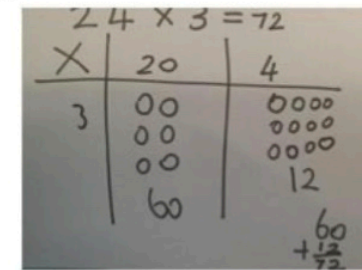


Show the links with arrays to first introduce the grid method.



Children can represent their work with place value counters in a way that they understand.

They can draw the counters using colour to show different amounts or just use the circles in the different columns to show their thinking.



ALVERTON CALCULATION POLICY - MULTIPLICATION

Begin with multiplying by one digit numbers and showing the clear addition alongside.

x	30	5
7	210	35

$$210 + 35 = 245$$

Moving forward, multiply by a 2 digit number, showing the different rows within the grid method.

	10	8
10	100	80
3	30	24

Progress to using the column method for long multiplication.

$$\begin{array}{r}
 1234 \\
 \times 16 \\
 \hline
 7404 \quad (1234 \times 6) \\
 12340 \quad (1234 \times 10) \\
 \hline
 19744
 \end{array}$$

		1	8
	×	1	3
		5	4
		2	
1	8	0	
2	3	4	

When appropriate, children can use their place value knowledge to make the number being multiplied 10, 100 or 1000 times bigger and then multiply and make the answer 10, 100 or 1000 times smaller.

$$\begin{array}{r}
 319 \quad (\times 100) \\
 \times 8 \\
 \hline
 2552 \quad (+100) = 25.52
 \end{array}$$

The grid method can then be progressed onto the compact method.

		3	2	7
	×			4
		1	3	0
			8	
		1	2	

$$0.22 \times 0.08 = 0.0176$$

$$\begin{array}{r}
 \times 10 \downarrow \quad \quad \quad \downarrow \times 10 \\
 \times 10 \downarrow \quad \quad \quad \downarrow \times 10 \\
 22 \times 8 = 176 \\
 < \quad \quad \quad \downarrow \begin{array}{l} \div 10 \div 10 \\ \div 10 \div 10 \end{array} \\
 \quad \quad \quad \quad \quad \quad \quad 0.0176
 \end{array}$$