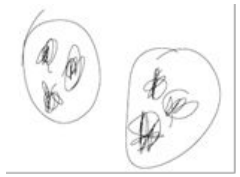
Progression in Written Multiplication at Overton St. Helens CE Primary School

Maple and Holly

Children are encouraged to develop a mental image of the size of numbers. They learn to think about equal groups or sets of objects in practical, real life situations.
They begin to record these situations using pictures.

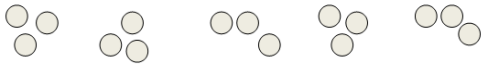
A child's jotting showing fingers on each hand as a double.



A child's jotting showing double three as three cookies on each plate.

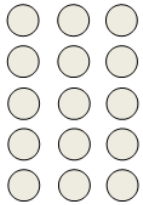
Elm

Children understand that multiplication is repeated addition and that can be done by counting in equal steps/groups.



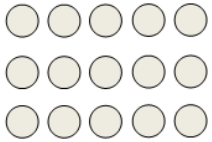
or

Children can then be introduced to the image of a rectangular array, initially through real items such as egg boxes, baking trays, ice cube trays, wrapping paper etc. and using these to show that counting up in equal groups can be a quicker way of finding a total.



3 + 3 + 3 + 3 + 3 = 15

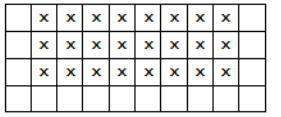
Children also understand that 3 x 5 is the same as 5 x 3



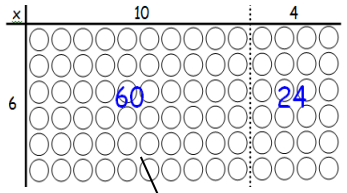
5 + 5 + 5 = 15

Willow

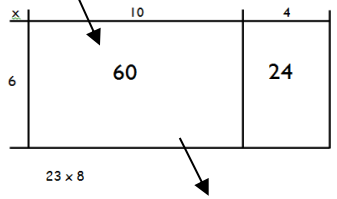
Children continue to use arrays and create their own to represent multiplication calculations to lead into grid method of multiplication.



3 x 8 = 8 + 8 + 8 = 24



(6 x 10) + (6 x 4)
60 + 24
84



x	20	3
8	160	24

160
+ 24
184

Beech part 1

In this stage, the array is removed and children use the grid method. This is an important step in retaining children's understanding of multiplication.

346 x 9

x	300	40	6
9	2700	360	54

2700
+ 360
+ 54
3114

The grid method can be used for multiplying any numbers.

4.92 x 3

This should then be expanded to...

x	4	0.9	0.02
3	12	2.7	0.06

12
+ 2.7
+ 0.06
14.76

ThHTU x U

ThHTU x TU

x	70	2
30	2100	60
8	560	16

2100
+ 560
+ 60
+ 16
2736

Beech part 2

The grid method should then be taken into an expanded vertical layout, and then into the compact vertical method.

368 x 6

x	300	60	8
6	1 800	360	48

1800
+ 360
+ 48
2208

Th H T U
3 6 8
x 6
4 8 (8 x 6)
3 6 0 (60 x 6)
+ 1 8 0 0 (300 x 6)
2 2 0 8

Th H T U
3 6 8
x 6
2 2 0 8

x	600	90	3	
20	12000	1800	60	= 13 860
4	2400	360	12	= 2 772 +
				16 632

Step 1
TTh Th H T U
6 9 3
x 2 4
2 7 7 2 (693 x 4)

Step 2
TTh Th H T U
6 9 3
x 2 4
2 7 7 2 (693 x 4)
+ 1 3 8 6 0 (693 x 20)

Step 3
TTh Th H T U
6 9 3
x 2 4
2 7 7 2 (693 x 4)
+ 1 3 8 6 0 (693 x 20)
1 6 6 3 2

Oak

By the end of year 6, children should be able to use the grid method and the compact method to multiply any number by a two-digit number. They could also develop the method to be able to multiply decimal numbers with up to two decimal places, but having been introduced to expanded and compact vertical methods in Year 5, it may be appropriate to use the expanded vertical method when introducing multiplication involving decimals.

4.92 x 3

T U . t h
4 . 9 2
x 3
0 . 0 6 (0.02 x 3)
2 . 7 (0.9 x 3)
+ 1 2 (4 x 3)
1 4 . 7 6

becomes

T U . t h
4 . 9 2
x 3
1 4 . 7 6

Progression in Written Multiplication	

	Children should not be made to go onto the next stage if: **1) they are not ready.** **2) they are not confident.** **Children should be encouraged to consider if a mental calculation would be appropriate <u>before</u> using written methods.**	