Notes	**Progression for Written Multiplication** St Agnes Primary

WRITTEN METHODS

By the end of year 6, children will have a **range** of mental calculation methods and the **one** reliable written method shown in this progression. For some children the grid method will be the most efficient and reliable calculation method for them and may even become their written method.

Selection will depend on the numbers involved.

Children should not be made to go on to the next stage if:

1) they are not ready

2) they are not confident

- Children should be encouraged to approximate their answers before calculating.
- Children should be encouraged to check their answers after the calculation using an appropriate strategy.
- Children should be encouraged to consider if a mental calculation would be appropriate before using written methods.

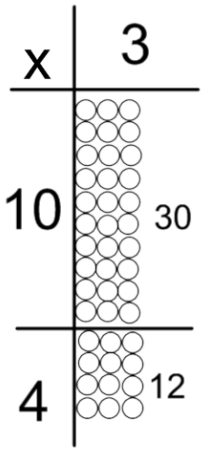
Children should be encouraged to select an appropriate calculation method, be it mental or written, dependent on the numbers involved in a calculation. To develop this skill children should be taught to ask themselves, '**Can I do this mentally?**'

Therefore, it is important that children's mental methods of calculation are practised and secured alongside their learning and development towards a compact written method.

INFORMAL EXPANDED METHOD: This leads the children to the more compact standard written method, developing an understanding of its structure and

14 x 3

Grid method



N.B. It is better to place the number with the most digits in the left hand column of the grid as it is easier to add the partial products and also links to the expectations for addition at this stage.

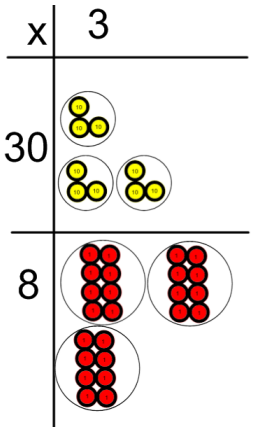
Notes	**Progression for Written Multiplication**

Y3

- Short multiplication TU x U

  38 x 3

The children will approximate first e.g. 38 x 3 is approximately 40 x 3
then will go onto using the grid method to make an accurate calculation.



x	3
30	90
8	24
	114

When children are confident using the Grid Method with understanding move onto x with larger numbers.

Short multiplication HTU x U extending to larger numbers

146 x 8

The children will approximate first e.g. 146 x 8 is approximately 150 x 8
then will go onto using the grid method to make an accurate calculation.

x	8
100	800
40	320
6	48
	1168

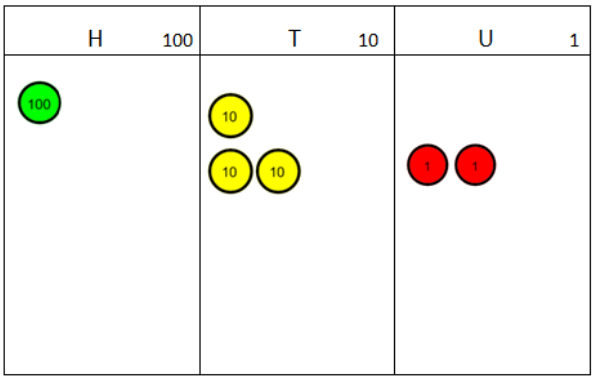
Y3 /4

Notes	**Progression for Written Multiplication**	Y4

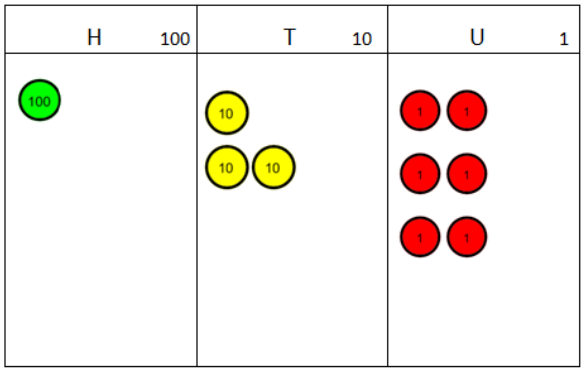
INFORMAL EXPANDED WRITTEN METHOD

- For those children moving on towards compact multiplication, recording needs to be reduced showing the links to the grid method.
- Short multiplication HTU x U extending to larger numbers

132 x 3

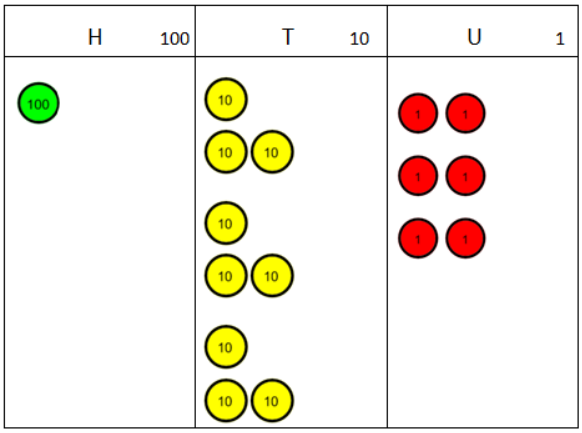


H	T	U
1	3	2
x		3



H	T	U
1	3	2
x		3
		6

3 x 2 = 6

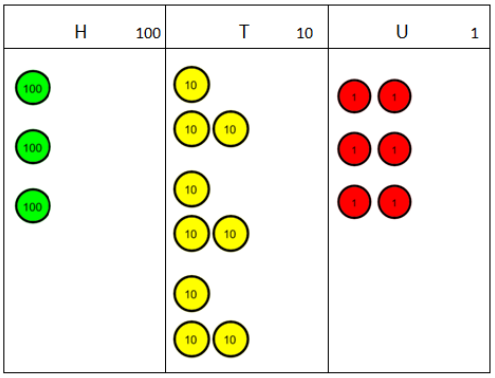


H	T	U
1	3	2
x		3
		6
9	0	

3 x 30 = 90 3 x 2 = 6

Notes	**Progression for Written Multiplication**	Y4

INFORMAL EXPANDED WRITTEN METHOD

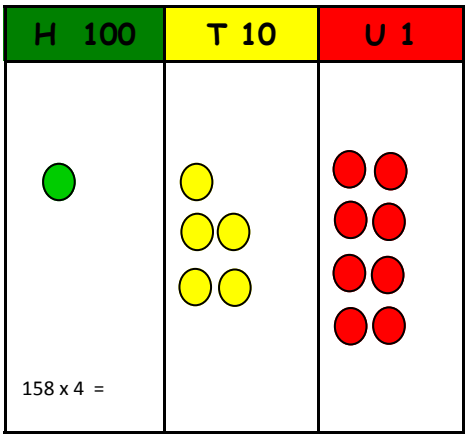


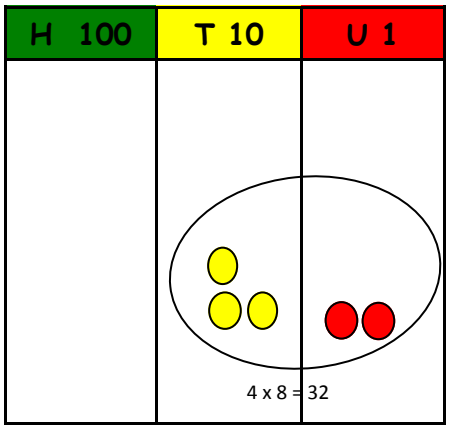
3 x 100 = 300 3 x 30 = 90 3 x 2 = 6

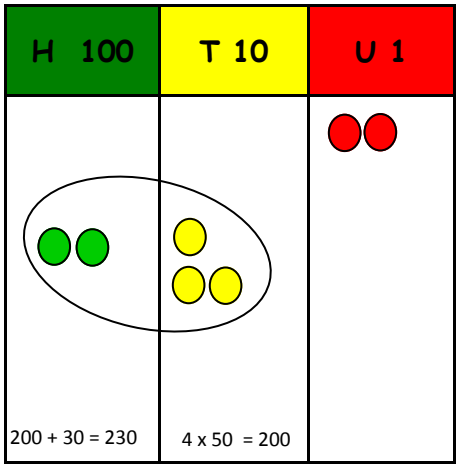
H	T	U
1	3	2
x		3
		6
	9	0
3	0	0
3	9	6

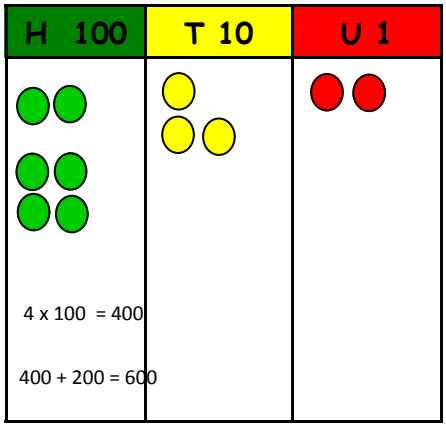
COMPACT WRITTEN METHOD: Short multiplication

Use the boards and counters as previously with appropriate calculations but record in the most compact way.









H	T	U
1	5	8
	x	4
6	3	2
2	3	

Y5

Notes	**Progression for Written Multiplication**

When children are confident using the most compact written method for short multiplication with understanding , along with increased times table knowledge and without needing PV counters, move on to multiplications using larger numbers.

```
  H T U
  1 7 3
    x 7
  1 2 1 1
    5 2
```

```
  4 3 4 6
    x   8
  3 4 7 6 8
    2 3 4
```

- Y5/6 continue to use compact formal method for short and long multiplication to include larger numbers and decimals up to 3 decimal places.

```
   4.73
  x   4
  18.92
    2 1
```

Long multiplication

Reduce the recording – long multiplication.

```
   372
  x 24
  ----
  1488
 7440
  ----
  8928
  ----
     1
```

40 comes from 20 x 2

It is important that children are not taught to just add a zero.