Notes	**Progression for Written Division St Agnes Primary**	**Y4**

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.

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

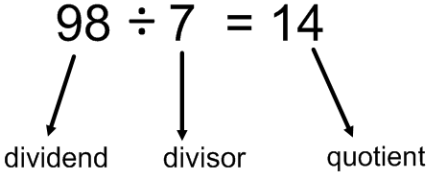
- Children should be encouraged to approximate their answers before calculating.
- Children should be encouraged to check their answers after the calculation

  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?**'

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



The teacher should model using the correct language and encourage children to use it, e.g.

dividend, divisor, quotient

Notes	**Progression for Written Division**

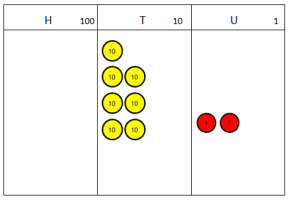
INFORMAL EXPANDED WRITTEN METHOD USING EFFICIENT CHUNKING:

Encourage children to produce a **'FACTS LIST'** using their knowledge of place value and related facts, looking for the two multiples of ten that 'TRAP' the dividend. They should be encouraged to find the largest possible multiple of ten of the divisor and what's left.

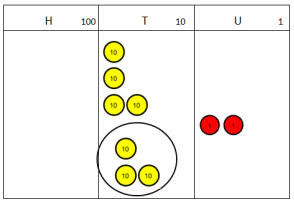
Short Division

Encourage children to develop the skill of 'trapping' the dividend to prepare for partitioning.

TU ÷ U 72 ÷ 3



10 X 3 = 30



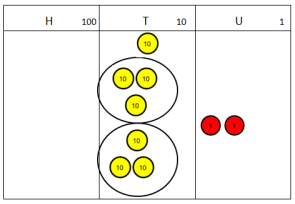
Facts list 72 ÷ 3

10 x 3 = 30

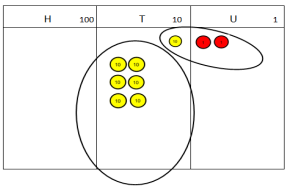
20 x 3 = 60 ← 72 'Trap the dividend'

30 x 3 = 90

20 X 3 = 60



72 partitioned into -



7 2

60 12

60 ÷ 3 = 20 12 ÷ 3 = 4

= 24

72 ÷ 3

TU

4

20

3 | 72

- 60

12

-12

0

Notes	**Progression for Written Division**

Y4

When children are confident using the Facts List and efficient chunking for short division with understanding , along with increased times table knowledge and without needing PV counters, move on to division using larger numbers.

HTU ÷ U

```
  H T U
    3 5
  ------
7 | 2 4 7
  -2 1 0
  -------
    3 7
   -3 5
   ----
      2
```

Facts list

10 x 7 = 70

20 x 7 = 140

30 x 7 = 210 ← 247 'Trap the dividend'

40 x 7 = 280

247 ÷ 7 = 35 r2 or $\frac{2}{7}$

$\frac{2}{7}$

2 left out of a group of 7 which equals $\frac{2}{7}$

Notes	**Progression for Written Division**

COMPACT METHOD:

Short Division: TU/HTU/ THTU ÷ U

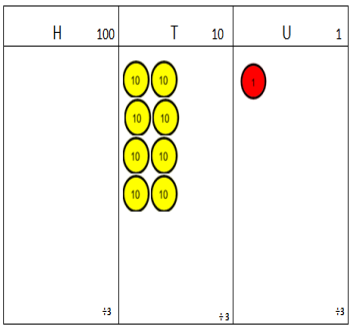
Those children who are confident and efficient working with the expanded method could be taught the more compact method of short division leading into dividing with decimals.

TU ÷ U

81 ÷ 3

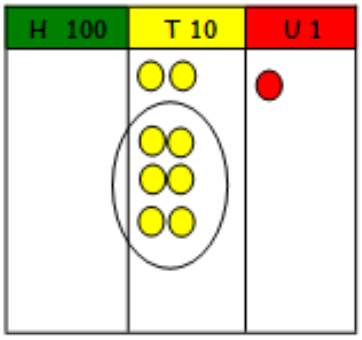
Facts List
10 x 3 = 30
20 x 3 = 60
30 x 3 = 90

81 Trap the dividend



There are 20 lots of 3 in 60

There are 2 tens and 1 unit left over

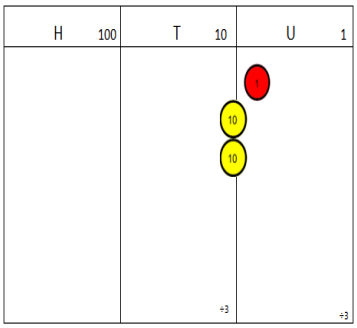


Children will then mentally work out that there are 7 groups of 3 in 21.

There are 7 lots of 3 in 21 units

H	T	U
	7	
	2	0

3 | 8 2 1



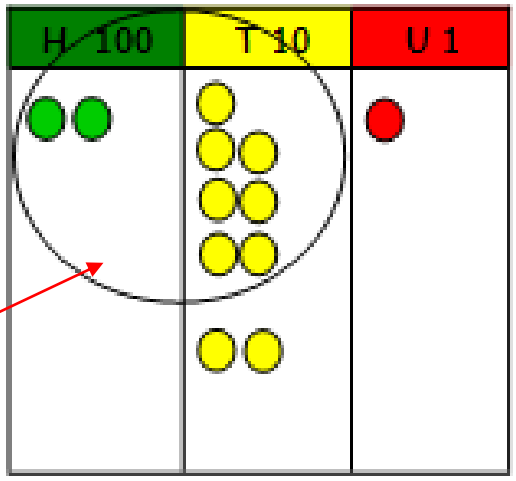
81 ÷ 3 = 27

Notes	**Progression for Written Division**

HTU ÷ U

291 ÷ 3

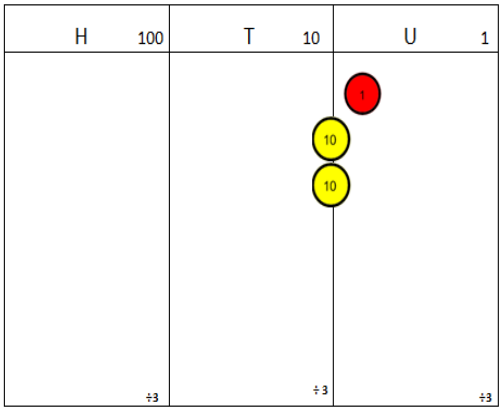
Facts List
50 x 3 = 150
60 x 3 = 180
70 x 3 = 210
80 x 3 = 240
90 x 3 = 270 ← 291 Trap the dividend
100 x 3 = 300



90 lots of 3 =270

H	T	U
	9	0
3	2 9	1
	2	

There are 2 tens and 1 unit left over



Children will then mentally work out that there are 7 groups of 3 in 21.

H	T	U
	9	7
3	2 9	1
	2	

291 ÷ 3 = 97

Develop short division up to 4 digit and involving decimals interpreting remainders appropriately according to the context.

Notes	**Progression for Written Division**	Y5 /6

Points to Consider

- Practical problem solving should continue throughout Key Stages 1 and 2 using division.
- When calculating with decimals and demonstrating understanding scale up by multiplying by 10 or 100, depending on the number of decimal places; and scale down by the same to give the answer.

E.g. 87.5 ÷ 7 → scale up by 10 → 87.5 x 10 = 875 → 875 ÷ 7

```
   1 2 5
  ------
7 | 8 7 5
```

Scale down by 10 → 125 ÷ 10 = 12.5

87.5 ÷ 7 = 12.5

Long division HTU ÷ TU

603 ÷ 26

603 ÷ 26 = 23 r5

Facts List
10 x 26 = 260
20 x 26 =520 ← 603 Trap the dividend
30 x 26= 780

```
   H T U
     2 3
  ------
26 | 6 0 3
   - 5 2 0
   -------
       8 3
   -   7 8
   -------
         5
```

r5 or 5/26 depending on the context