**Progression in Written Division**

Stage 1

Children are encouraged to develop a mental image of the number system in their heads to use for calculation. They should experience practical calculation opportunities involving **equal** groups and **equal** sharing.

They may develop ways of recording calculations using pictures.
A child's jotting showing halving six spots between two sides of a ladybird.
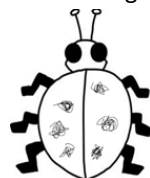
A child's jotting showing how they shared the apples at snack time between two groups.

Stage 2

Children explore practical contexts where they share equally and group equally. $6 \div 2 = ?$
Equal sharing (6 shared equally between 2)

6 football stickers are shared equally between 2 people, how many do they each get? Children may solve this by using a 'one for you, one for me' strategy until all of the stickers have been given out.
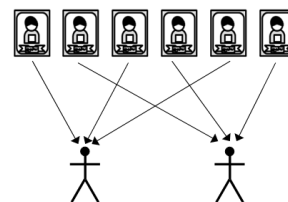
Equal grouping (How many groups of 2 are there in 6?)

There are 6 football stickers, how many people can have 2 stickers each?

Stage 3

Children continue to use practical equipment to represent division calculations as grouping (repeated subtraction) and use jottings to support their calculation.

$12 \div 3 = ?$ Children begin to read this calculation as, 'How many groups of 3 are there in 12?'

At this stage, children will also be introduced to division calculations that result in remainders.

$13 \div 4 = 3$ remainder 1

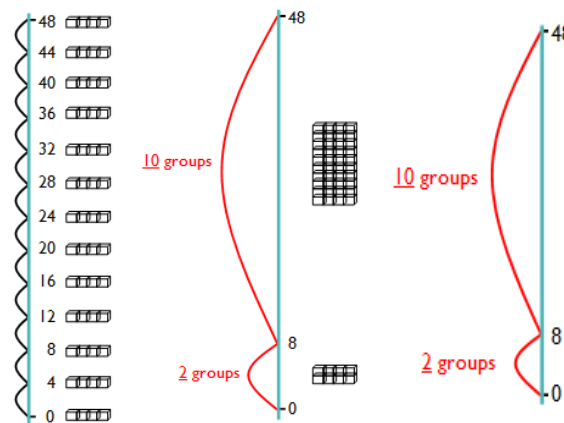
Stage 4

$43 \div 8$

$43 \div 8 = 5$ remainder 3

At this stage, children also learn if the remainder should be rounded up or down e.g. $62 \div 8 = 7$ remainder 6

I have 62p. Sweets are 8p each. How many can I buy?
Answer: 7 (the remaining 6p is not enough for another sweet)
Apples are packed into boxes of 8. There are 62 apples. How many boxes do I need?
Answer: 8 (the remaining 6 apples still need to be placed into a box)

Stage 5

The previous method of repeated subtraction on a number line is continued, but using a vertical number line alongside practical equipment.
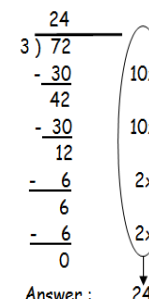The repeated subtraction is made more efficient by subtracting 'chunks' of the divisor.

Stage 6

This is the final stage, in which children use the 'chunking' method.

$72 \div 3$

Children should write key facts in a menu box. This will help them in identifying the largest group they can subtract in one chunk.

Progression in Written Division

$196 \div 6$

$$\begin{array}{r} 32 \; r \; 4 \\ 6 \overline{)\, 196} \\ -\,180 \\ \hline 16 \\ -\,12 \\ \hline 4 \end{array}$$

30x
2x

1x	6
2x	12
4x	24
5x	30
10x	60
20x	120

The key facts in the menu box should be extended to include 4x and 20x.

Answer : 32 remainder 4 or 32 r 4

$972 \div 36$

$$\begin{array}{r} 27 \\ 36 \overline{)\, 972} \\ -\,720 \\ \hline 252 \\ -\,252 \\ \hline 0 \end{array}$$

20x
7x

Answer : 27

$362 \div 17$

$$\begin{array}{r} 21.29 \\ 17 \overline{)\, 362} \\ -\,340 \\ \hline 22 \\ -\,17 \\ \hline 5.0 \\ -\,3.4 \\ \hline 1.60 \\ -\,1.53 \\ \hline 0.07 \end{array}$$

20x
1x
0.2x
0.09x

To enable children to continue the calculation, they need to understand that 5 is the same as 5.0

When recalling and deriving multiplication and division facts, children should also identify decimal equivalents of times tables,
e.g. if $2 \times 17 = 34$, I know that
$0.2 \times 17 = 3.4$
if $9 \times 17 = 153$, $0.9 \times 17 = 15.3$
so $0.09 \times 17 = 1.53$

$$\begin{array}{r} 1\;3\;7 \; r\;5 \\ 7 \overline{)\, 9\,{}^2 6\,{}^5 4} \end{array}$$

In addition to the chunking method children will, when appropriate, be taught the short compact method of division.

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 before using written methods.