

**National Curriculum Programme of Study;**

- recall multiplication and division facts for multiplication tables up to  $12 \times 12$
- Divide two-digit and three-digit numbers by a one-digit number using formal written layout



**Y4**

Division

**BY THE END OF YEAR 4...**

By the end of Year 4, children will be able to show their understanding as:

Use the short written method of division of 3 digit numbers by 1 digit numbers. (include exchange and remainders)

$$\begin{array}{r} 108 \text{ r}5 \\ 6 \overline{) 6653} \\ \underline{66} \phantom{53} \\ 053 \\ \underline{05} \phantom{3} \\ 03 \\ \underline{03} \\ 0 \end{array}$$

**Using place value counters to demonstrate the need for exchange when dividing**

Examples of division calculations requiring exchange need to be chosen carefully to enable the children to use the place value counters in an efficient way, strengthening their conceptual understanding.

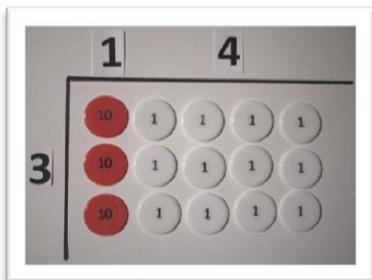
E.g.  $42 \div 3$



$$\begin{array}{r} 1 \\ 3 \overline{) 42} \\ \underline{3} \phantom{2} \\ 12 \end{array}$$

Start with 42 represented using the smallest number of counters. Add the boundary line. Share the '10' counters between the three rows, placing one in each row. Indicate the single '10' counter remaining, alongside the two '1' counters.

Discuss the fact that the single '10' counter cannot be shared equally between the three rows, so it must be exchanged for ten '1' counters. Emphasise that the total has not changed, but 42 is now represented as 30 and 12. Model the formal written layout alongside the visual image of the counters ensuring children recognise the similarities between the two.



Share the twelve '1' counters between the three rows, placing four in each. Indicate the number of tens and ones in each row, writing the answer above the boundary line. Complete the formal written layout alongside the final visual image.

$$\begin{array}{r} 14 \\ 3 \overline{) 42} \\ \underline{12} \\ 30 \\ \underline{30} \\ 0 \end{array}$$

## Exchanging with remainders

A similar approach should be used when dividing larger numbers, and when carrying out calculations with remainders.

E.g.  $427 \div 3$

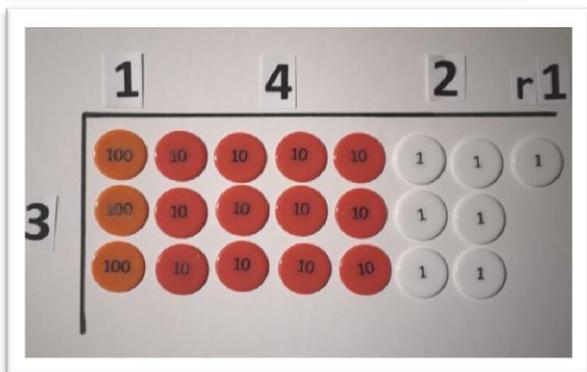


The '100' counters are shared between the three rows, giving one counter to each row, with one left over.



The last '100' counter is exchanged for ten '10' counters. There now twelve 'ten' counters to share between the three rows.

$$\begin{array}{r} 1 \\ 3 \overline{) 427} \end{array}$$



The twelve 'ten' counters and the seven '1' counters are shared between the three rows. There are four '10' counters in each row, and two '1' counters. There is one '1' counter remaining.

$$\begin{array}{r} 1 \quad 4 \quad 2 \quad r.1 \\ 3 \overline{) 427} \end{array}$$

Therefore  $427 \div 3 = 142 \text{ r.}1$

When deemed appropriate, children should start to complete short division calculations using the formal written layout, without the support of the place value counters. Children should still be encouraged to verbalise their understanding as they did when working practically.