

National Curriculum Programme of Study;

- recall multiplication and division facts for multiplication tables up to 12 x 12
- multiply two-digit and three-digit numbers by a one-digit number using the formal written layout
- solve problems involving multiplying and adding, using the distributive law to multiply two-digit numbers by one digit, integer scaling problems and harder correspondence problems such as n objects are connected to m objects



BY THE END OF YEAR 4...

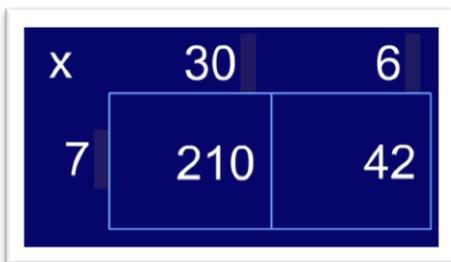
By the end of Year 4, children will be able to show their understanding as;

Compact column written method for multiplication

$$\begin{array}{r}
 342 \\
 \times \quad 7 \\
 \hline
 2394 \\
 \hline
 21
 \end{array}$$

Following on from Year 3...

Expanded column method for multiplication (TU x U)



$$\begin{array}{r}
 36 \\
 \times 7 \\
 \hline
 42 \\
 210 \\
 \hline
 252
 \end{array}$$

The expanded column method for multiplication should only be introduced once children are secure with the grid method detailed in Year 3. They should be able to explain the structure of the grid and how it helps to find the answer to the multiplication calculation.

The column notation should be shown alongside the same example represented as a grid (and even an array), enabling the children to see the similarities. Model the expanded column method, paying particular attention to the value of the digits involved, and showing where the same part appears in the grid method.

Compact column method for multiplication (TU x U)

Once confident with the expanded column method for multiplication, and showing considerable conceptual understanding, children can progress towards the compact method.

As at all earlier stages, this should be introduced alongside the previous expanded method, enabling children to understand the positioning of numbers, reducing the need to teach a 'process'.

$$\begin{array}{r}
 36 \\
 \times 7 \\
 \hline
 252 \\
 \hline
 4
 \end{array}$$

Multiplying a three-digit number by a single digit number

x	100	40	3
6	600	240	18

When increasing the size of the numbers being multiplied, to HTU x U, the grid method should be used again, to reinforce conceptual understanding.

Children should make use of known facts and their understanding of multiplying numbers by 10 and 100.

Once confident with the grid method, and the scale of the numbers involved, the same calculation should be modelled alongside, using the expanded column method.

Children should be asked about the different parts of the calculation; *Where can you see the 18 in the grid? Which numbers were multiplied together to result in 240? Which method makes it easier to add the separate parts at the end?*

$$\begin{array}{r}
 143 \\
 \times \quad 6 \\
 \hline
 858 \\
 \hline
 21
 \end{array}$$

Once conceptual understanding is embedded, shorten the written form of the calculation using the formal short multiplication method.

Show the compact form alongside the expanded, for the same calculation, and allow the children to decide for themselves where the different parts of the calculation are recorded.

$$\begin{array}{r}
 143 \\
 \times \quad 6 \\
 \hline
 18 \\
 240 \\
 600 \\
 \hline
 858
 \end{array}$$

Showing children a completed compact short multiplication recording and asking them to write it in expanded form, as well as the grid, is an effective way of assessing understanding.