



Multiplication vocabulary: multiply (by), times, product, groups of, lots of, times table.

To multiply successfully, children need to be able to:

- Recall all multiplication facts to 10×10
- Partition number into multiples of one hundred, ten and one
- Work out products such as 70×5 , 70×50 , 700×5 or 700×50 using the related fact 7×5 and their knowledge of place value.
- Add two or more single-digit numbers mentally
- Add multiples of 10 (such as $60 + 70$) or of 100 (such as $600 + 700$) using the related addition fact, $6 + 7$, and their knowledge of place value
- Add combinations of whole numbers

Written Methods for Multiplication of Whole Numbers

Stage One: Mental Multiplication using Partitioning

Method

Mental methods for multiplying $TU \times U$ are a useful starting point as is linking multiplication to repeated addition. This allows the tens and ones to be multiplied separately. These are then added to find the total product.

Either the tens or the ones can be multiplied first but it is more common to start with the tens.

Example

Informal recording in Year Four might be :

$$43 \times 6 =$$

$$\begin{array}{r} 40 + 3 \\ \times 6 \\ \hline 240 + 18 = 258 \end{array}$$

Stage Two: The Grid Method

As a starting point, a written method which uses a grid can be used. It is an alternative way of recording the above steps.

It is better to place the number with the most digits in the left-hand column of the grid so that it is easier to add the partial answers. It is also recommended that the partitioned numbers are written in a different colour to avoid confusion with the multiplied numbers.

The grid method can also be used to multiply three digit numbers and decimal numbers.

$$38 \times 7 = (30 \times 7) + (8 \times 7) = 210 + 56 = 266$$

x	7
30	210
8	56

$$\begin{array}{r} 210 \\ + 56 \\ \hline 266 \end{array}$$

Stage Three: Short Multiplication

Method

This shortened method of multiplication requires less recording.

Step One : Children should use their knowledge of place value to correctly align the digits in their columns. Multiplication questions are presented in a variety of ways (e.g. 38×7). Children are advised to multiply the larger number by the smaller number.

Step Two : Multiply the units first. Here, multiply 8 by 7 = 56. Place the six in the units column, carrying the 5 tens below the answer line.

Step Three : Multiply the tens. Here, multiply 3 (tens) by 7 = 21 (tens). Remember to add the 5 (tens), equalling 26 (tens), or two hundreds and 6 tens. Place the 6 in the tens column and the two in the hundreds column.

Example

$$\begin{array}{r} \text{H T U} \\ 38 \\ \times \quad 7 \\ \hline 266 \\ \hline 5 \end{array}$$

Stage Four: Long Multiplication

Towards the end of Year Five, children are taught the standard column method to multiply two or three digit numbers by two digit numbers.

As with the short method of multiplication, begin by aligning the hundreds, tens and units in their correct columns, placing the larger number on top.

Children begin multiplying the units column first, noting the answer below the line and carrying the tens when necessary.

Having multiplied the units, tens and hundreds by the units, children then multiply these once again, this time by the tens. To indicate multiplication by a ten, it is necessary to place a 0 in the units column.

To complete the calculation, add the two rows together, noting the answer on the line.

$$158 \times 67 =$$

$$\begin{array}{r} \text{Th H T U} \\ 158 \\ \times \quad 67 \\ \hline 1106 \\ + 9480 \\ \hline 10586 \end{array}$$

