

Short multiplication

The next step in learning to multiply bigger numbers is the short multiplication method.

In this method, not every part of the calculation is written out in full. Here's an example:

$$\begin{array}{r} \text{H} \quad \text{T} \quad \text{U} \\ \quad \quad \text{4} \\ \quad \quad \text{3} \quad \text{8} \\ \times \quad \quad \text{6} \\ \hline \text{2} \quad \text{2} \quad \text{8} \end{array}$$

In this calculation:

Step 1:

First we multiply the 8 by 6:

- $6 \times 8 = 48$: 48 is 4 lots of 10 and 8 units.
- Write down the 8 units underneath all the units.
- Carry over the 4 lots of 10 to add on to the tens part of the calculation coming next.

Step 2:

Next we multiply the 3, which really means 30 or 3 lots of 10, by 6:

- 6×3 lots of 10 = 18 lots of 10.
- Add on the 4 lots of 10 that we carried over = 22 lots of 10.
- Write this down next to the 8 units already there and we have our total: 228.

Long Multiplication

Long multiplication uses a similar method for multiplying by numbers over 10:

$$\begin{array}{r} \text{H} \quad \text{T} \quad \text{U} \\ \quad \text{1} \quad \text{4} \\ \quad \quad \text{3} \quad \text{8} \\ \times \quad \quad \text{2} \quad \text{6} \\ \hline \text{2} \quad \text{2} \quad \text{8} \quad \text{(Step 1)} \\ \text{7} \quad \text{6} \quad \text{0} \quad \text{(Step 2)} \\ \hline \text{9} \quad \text{8} \quad \text{8} \quad \text{(Step 3)} \end{array}$$

Step 1:

- 6×38 is completed as a short multiplication.

Step 2:

- The 2 in 26 means 20, or 2 lots of 10. So, instead of multiplying 38 by 20 in one go, we can multiply by 10 first and then 2.
- To multiply by 10 we need to move our digits one place to the left. We can do this by putting a zero in the units column.
- Then we multiply 38 by 2, as in a short multiplication:
- $2 \times 8 = 16$. Put down the 6 units and carry over the 1.
- $2 \times 3 = 6$. Add on the 1 we carried over = 7.
- Write down the 7 in the hundreds column to give our answer to step 2: 760.

Step 3:

- Add the two answers together to give our final answer:
 $228 + 760 = 988$.