Multiplying Doubles and Digits

Learning Objective:

To multiply two-digit and three-digit numbers by a one-digit number using formal written layout.

Next

38 × 4

I’ve used expanded multiplication to work out 38 × 4.

Can you explain what I’ve done so far? Can you finish it?

		3	8
×			4
		3	2
+	1	2	0

38 × 4

First, I multiplied the ONES, then I multiplied the TENS, although when doing expanded multiplication, these could be done in any order.

They need to be added together to find the answer.

Did you get it right?

		3	**8**
×			**4**
		3	2
+	1	2	0
	1	**5**	**2**

×	30	8
4	*120*	*32*

= **152**

Here is the same multiplication, solved using the grid method and the expanded multiplication method.

What similarities and differences do you notice?

$$
\begin{array}{rr}
 & 38 \\
\times & 4 \\
\hline
 & 32 \\
+ & 120 \\
\hline
 & \mathbf{152} \\
\hline
\end{array}
$$

×	30	8
4	*120*	*32*

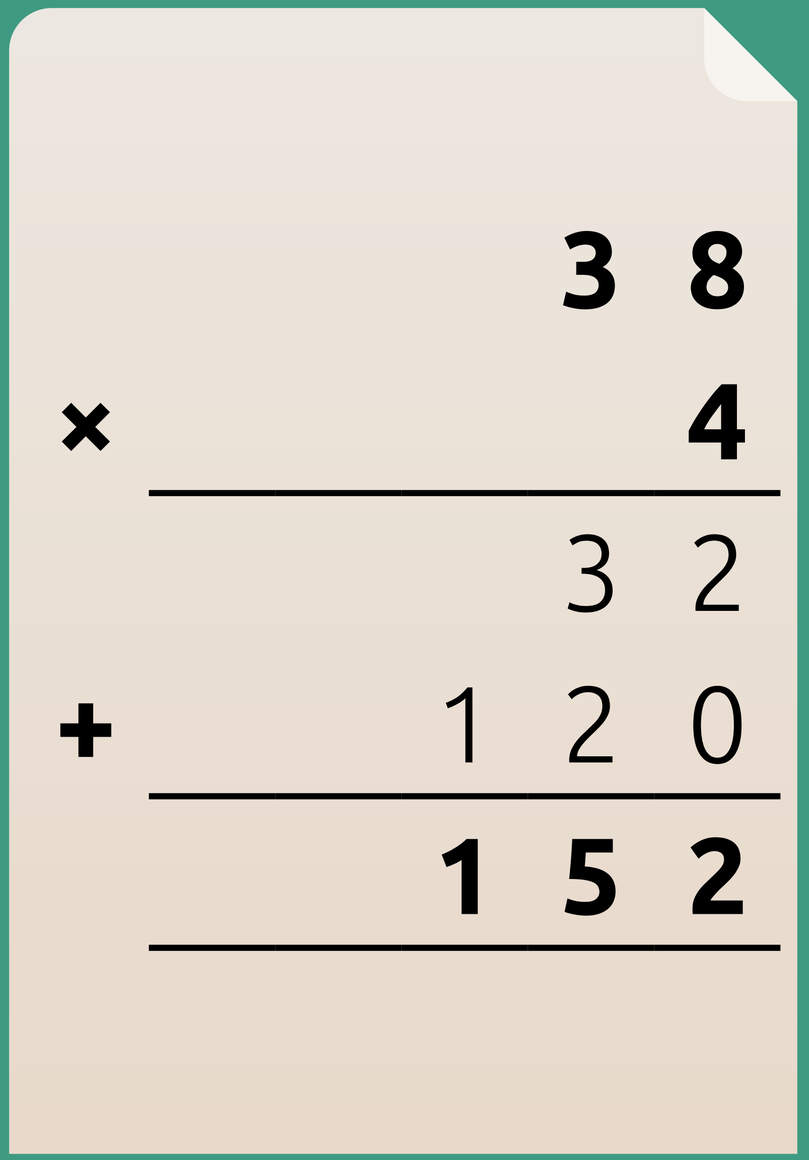
= **152**

Similarities and Differences

In both, the number to be multiplied is partitioned.

Each partitioned part can be multiplied in any order.

The multiples of each partitioned amount are added to find the answer.



213 × 6

×	200	10	3
6	*1,200*	*60*	*18*

Here, the same calculation has been done in three different ways.

Can you explain what is happening in each calculation?

EXPANDED MULTIPLICATION

$$
\begin{array}{rr}
 & 213 \\
\times & 6 \\
\hline
 & 18 \\
 & 60 \\
+ & 1,200 \\
\hline
 & 1,278 \\
\hline
\end{array}
$$

SHORT MULTIPLICATION

$$
\begin{array}{rr}
 & 213 \\
\times & 6 \\
\hline
 & 1,278 \\
\hline
 & {\scriptstyle 1\quad\quad 1}
\end{array}
$$

SHORT MULTIPLICATION

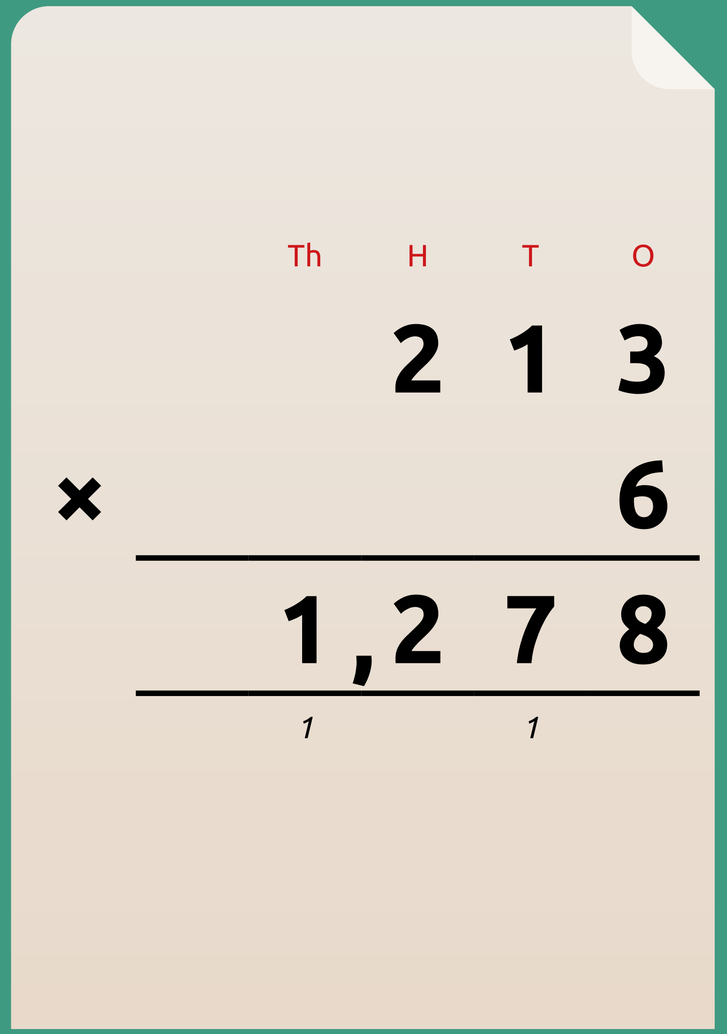
We can use short multiplication to multiply any number by a one-digit number.

Working from right to left, the ONES, TENS, HUNDREDS and so on are multiplied.

For this calculation, two exchanges have been done:

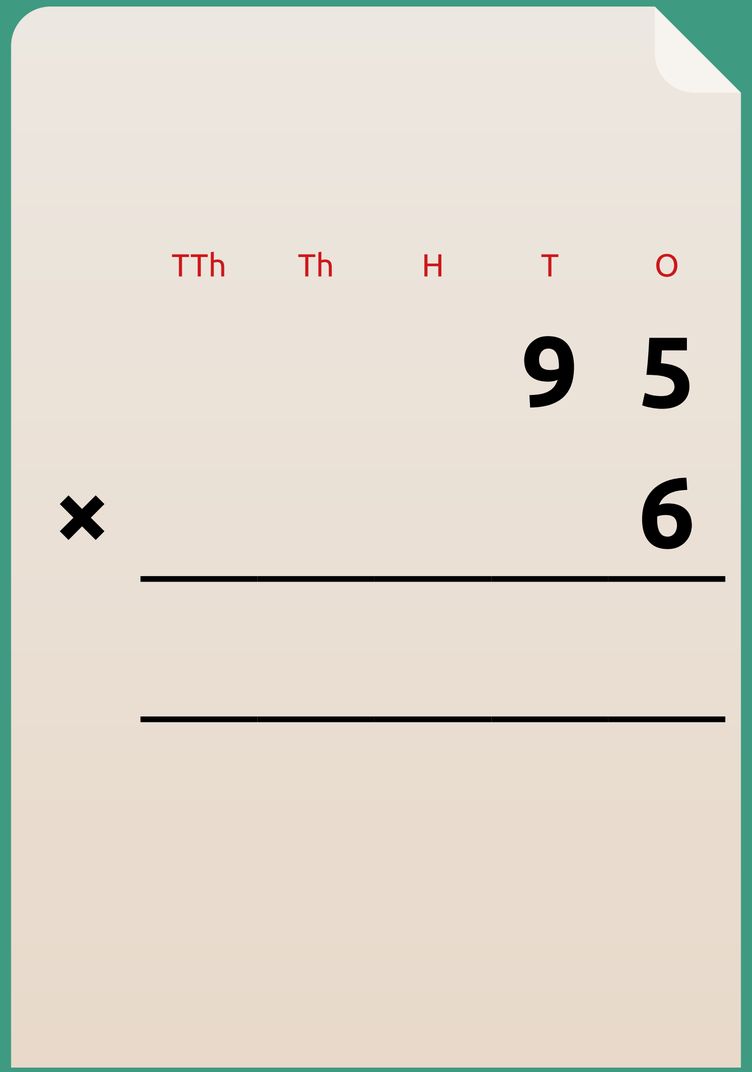
Firstly, 3 × 6 = 18. The ONES column can show a maximum of 9 ones, so 18 ONES have been exchanged for 8 ONES and 1 TEN, which is written below.

Describe the second exchange to a partner.



Practise:

Use short multiplication to solve this:



Practise:

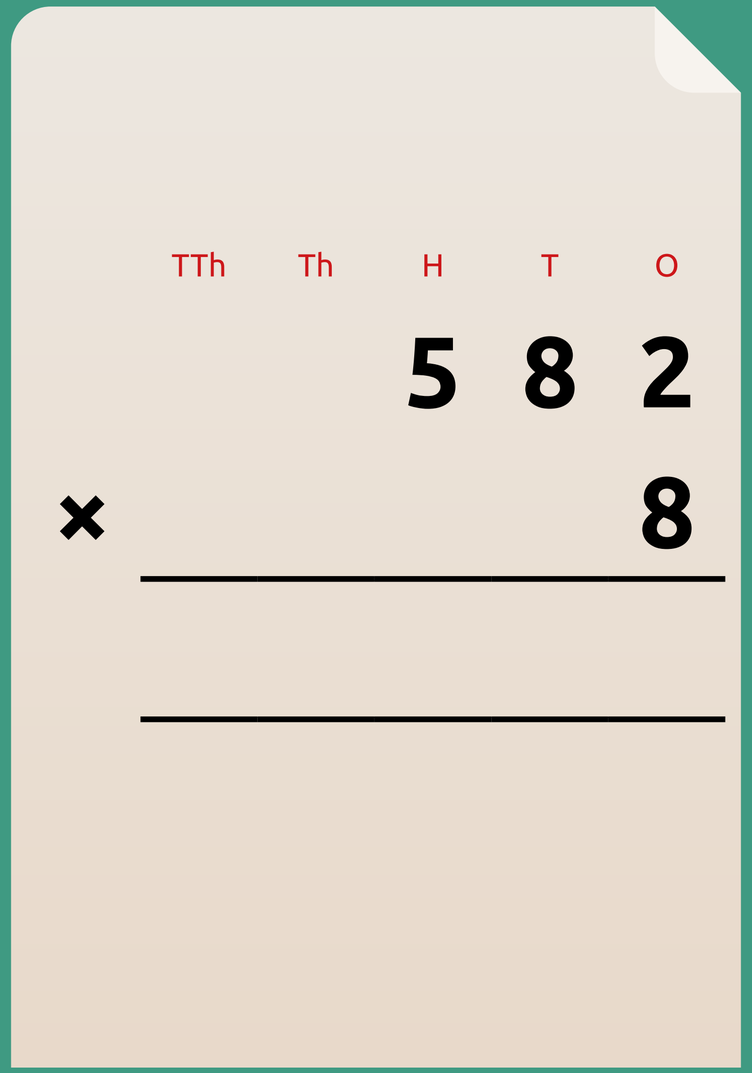
Use short multiplication to solve this:

	TTh	Th	H	T	O
				9	5
×					6
			5	7	0
				3	

Did you get it right? Let's try another…

Practise:

Use short multiplication to solve this:



Practise:

Use short multiplication to solve this:

	TTh	Th	H	T	O
			5	8	2
×					8
		4,	6	5	6
			6	*1*	

Did you get it right? Let's try one more REALLY tricky one…

Practise:

Use short multiplication to solve this:

Practise:

Use short multiplication to solve this:

	TTh	Th	H	T	O
		2	3	3	2
×					7
	1	6	3	2	4
		2	*2*	*1*	

That was tough! Did anyone manage to work it out?

Well done, everyone!

PLENARY

I’m paying for each of my children to attend a gymnastics club. It costs £215 per child. I have six children. What will it cost me, altogether?

PLENARY

Did you get it right?

Did you use short multiplication or another method to work it out?

$$\begin{array}{r} 215 \\ \times \quad 6 \\ \hline 1{,}290 \\ \hline {\scriptstyle 3} \end{array}$$