1

$$36$$
$$\times 27 \leftarrow \text{7 units}$$

2 tens ↗

What do we do when we want to multiply a number by another number that has two digits in it like the sum shown above? This is known as long multiplication.

How do we do it? Well first we look at the number we are multiplying by – in this sum it is 27.

27 is made up of 2 tens and 7 units.

2

$$36$$
$$\times 247$$
$$252$$

How To Do This:

① $6 \times 7 = 42$ so we write down the 2 units and carry our 4 tens

② Now we do $3 \times 7 = 21$ and add on our 4 tens to make 25

So first we just multiply 36 by the 7 units. We don't worry about the two tens at all yet.

So this sum is just like a normal multiplication sum we looked at before. And we get the answer 252 and write that answer in.

5

$$36$$
$$\times \textcircled{2}47$$
$$252$$

This number stands for 20, or two tens or 2×10

But we still need to multiply by the two tens (or 20) that is now circled in green in the sum above.

That number 2 stands for 2 tens or we could write it as 2×10

6

$$36$$
$$\times \textcircled{2}47$$
$$252$$

So we can multiply 36×2 and then 36×10 and it works the same way.

So for an easy way to multiply this, instead of trying to multiply 36 by 20, we could multiply it by 2 and then by 10.

This is the same as multiplying by 20.

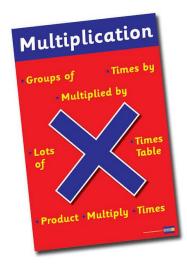|	
7 $\begin{array}{r} 36 \\ \times\ 2\overset{4}{\cancel{}}7 \\ \hline 252 \\ 0 \end{array}$ *When we multiply the tens we write our answers under our first answer*	It's a little like a shortcut because I know I'm going to be multiplying 36 × 10 and this will just add on a zero so I'm putting it in now.
8 $\begin{array}{r} 36 \\ \times\ \overset{1}{2}7 \\ \hline 252 \\ +\ 720 \\ \hline 972 \end{array}$	This my answer for 36 × 20. Now I just add the two answers together
But remember what we said before. If we multiply any number by 10 we can just add a zero. So if we're going to multiply 36 by 2 and then multiply it by 10, our answer is going to end in a zero because we're multiplying by 10. So to make it easier we can just put this zero in now before we start. You can see where I've added in the red zero in the box above.	Now instead of multiplying 36 by two tens, I just have to multiply it by 2 because I've already added in my zero. So my answer for 36 multiplied by 20 is: 720 Now I just need to add my answer from multiplying by the units (252) and my answer from multiplying by the tens (720) and I get my final answer: 972

You can click on the picture below to watch a short video showing the steps in completing long multiplication

Here's another example. See if you can follow the steps to get the answer:

1) Work out your answer for 42 x 7 and write that in first. You should get 294.

2) Now we need to multiply 42 by 20 or the two tens. So use your shortcut and fill in your zero first under the 4 in 294.

3) Now multiply 42 x 2 and write in your answer. You should have 840.

4) Now add 294 and 840 together to get your answer. It should be 1134.

Here's a place for you to try the steps:

```
  42
x 27
```

Your sum should look like this at the end:

```
   42
 x 27
  294
+ 840
 1134
```

Now here's some to try yourself:

(a) 41   (b) 31   (c) 51   (d) 64   (e) 58
   x 17   x 17   x 17   x 27   x 27

Long Multiplication Activity D

1. (a)　41　　(b)　54　　(c)　67　　(d)　72　　(e)　64
　　　× 26　　　× 28　　　× 24　　　× 24　　　× 29

2. (a)　56　　(b)　64　　(c)　94　　(d)　87　　(e)　75
　　　× 32　　　× 47　　　× 64　　　× 56　　　× 81

3. (a) 56 × 87　　(b) 73 × 91　　(c) 48 × 63　　(d) 29 × 36　　(e) 80 × 49