National Curriculum Programme of Study;

- divide numbers up to 4 digits by a two-digit whole number using the formal written method of long division, and interpret remainders as whole number remainders, fractions, or by rounding, as appropriate for the context
- divide numbers up to 4 digits by a two-digit number using the formal written method of short division where appropriate, interpreting remainders according to the context

Y6

Division

BY THE END OF YEAR 6…

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

Divide 4 digit by 2 digit using multiple of the divisor method
Divide 4 digit by 2 digit using short division method.

Dividing by a two-digit number

Following on from Year 5, children will now be confident using a compact layout for short division of a four-digit number by a single digit number. Where appropriate, children can continue to use this method when dividing by a two-digit number.

E.g.

```
         0   4   5   r.1
       ----------------
           4   5
 1   1 | 4   9   6
```

OR (depending on context)

```
         0   4   5   1/11
       ----------------
           4   5
 1   1 | 4   9   6
```

More complex long division

Often the numbers involved in a division calculation will determine an appropriate method.

```
         0   0
       ------------
           1   13
 1   5 | 1   3   5
```

Provide children with a calculation such as 135 ÷ 15 and to ask them to solve it using the method shown above. This will highlight the need for an alternative method to that of short division.

For this example, children will need to draw upon their mental calculation skills to estimate answers and explain their thinking. They will know that 15 x 10 = 150, and so should be expecting the answer to be less than 10. They may recognise that 135 is 15 less than 150, and so the answer is 9.

Children should be encouraged to draw upon known facts, and establish what they already know about the divisor. This can be recorded in a 'fact box' to support, if necessary.

E.g.420 ÷ 15
The chosen multiples of the divisor will depend oneach child's known facts and their ability to manipulate these using doubling and halving skills. This needs to be carefully modelled.
This'fact box' is then used to completed the long division, recording the multiples of the divisor at the side.

15 x 10 = 150 15 x 5 = 75 15 x 2 = 30

Expressing remainders as decimals

		0	2	8	
1	5	4	2	0	
		1	5	0	15 X 10
		2	7	0	
		1	5	0	15 X 10
		1	2	0	
			7	5	15 X 5
			4	5	
			4	5	15 X 3
				0	

Multiples of the divisor are subtracted from the dividend, using the language of 'grouping'.

How many groups of 15 are there in 420? First we'll subtract 10 groups of 15, we have 270 left. We can subtract another 10 groups of 15 and we now have 120 left. Usinbg my fact box, I know that 5 groups of 15 are 75. I will subtract these, and have 45 remaining. I know that this is 3 groups of 15, which I can subtract and have nothing left. Altogether I subtracted exactly 28 groups of 1, so 420 ÷ 15 = 28

		0	2	8	r.	12
1	5	4	3	2		
		1	5	0	15	X 10
		2	8	2		
		1	5	0	15	X 10
		1	3	2		
			7	5	15	X 5
			5	7		
			4	5	15	X 3
			1	2		

The same method can be used to show remainders 'left over', when no more group s of 15 can be subtracted.

Remainders can be converted to fractions using the same language as introduced in Year 5;
There are 12 remaining of the next group of 15.
The remainder is $^{12}/_{15} = {}^{4}/_{5}$