Year Six – Division

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

NB Ensure that children are confident with the methods outlined in the previous year's guidance before moving on

Continue to practise the **formal method of short division**, with and without remainders, using the language of place value to ensure understanding (see Y5 guidance).

496 ÷ 11 = 45 r1

$$
\begin{array}{r}
4\;5\;\text{r}\;1 \\
11\;\overline{)\;4\;9\;{}^{5}6}
\end{array}
$$

The remainder can also be expressed as a fraction, $\frac{1}{11}$ (the remainder divided by the divisor)

Dividing by a two-digit number using a **formal method of long division:**

$$
\begin{array}{r}
4\;5\;\text{r}\;1 \\
11\;\overline{)\;4\;9\;6} \\
-\;4\;4\;0 \quad (40 \times 11) \\
\hline
5\;6 \\
-\;5\;5 \quad (5 \times 11) \\
\hline
1 \quad (\text{remainder})
\end{array}
$$

Multiples of the divisor (11) have been subtracted from the dividend (496)

'40 (lots of 11) + 5 (lots of 11) = 45 (lots of 11)'

'1 is the remainder'

Answer: $45\frac{1}{11}$

Standard short division does not help with the following calculation. However, it can be solved using **long division** (by repeated subtraction using multiples of the divisor):

144÷ 16 = 9

$$
\begin{array}{r}
9 \\
16\,\overline{)\,144} \\
-64 \quad (4 \times 16) \\
\hline
80 \\
-64 \quad (4 \times 16) \\
\hline
16 \\
-16 \quad (1 \times 16) \\
\hline
0
\end{array}
$$

Multiples of the divisor (16) have been subtracted from the dividend (144)

'4 (lots of 16) + 4 (lots of 16) + 1 (lot of 16) = 9 (lots of 16)

There is no remainder'

Children will need to select the most effective method for each calculation/problem they meet, including whether to use the standard, **formal written method of long division:**
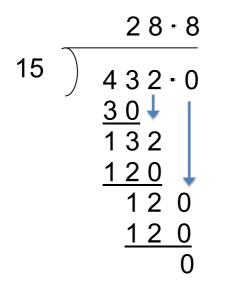
432 ÷ 15 = 28 r12

$$
\begin{array}{r}
28 \ \text{r}12 \\
15\,\overline{)\,432} \\
300 \quad (20 \times 15) \\
\hline
132 \\
120 \quad (8 \times 15) \\
\hline
12 \quad (\text{remainder})
\end{array}
$$

Multiples of the divisor (15) have been subtracted from the dividend (432)

'20 (lots of 15) + 8 (lots of 15) = 28

12 is the remainder'

The remainder can also be expressed as a fraction, $\frac{12}{15}$ (the remainder divided by the divisor) or as a decimal, **0.8** (see next example)

The answer is: $28\frac{12}{15}$ or 28·8

This is an alternative way of recording formal long division:

432 ÷ 15 = 28·8

```
                2 8 · 8
       _____
  15  ) 4 3 2 · 0
        3 0
        1 3 2
        1 2 0
          1 2 0
          1 2 0
              0
```

NB Only teach this method when children are completely secure with the previous method.

The remainder is expressed as a decimal.

NB If, at any time, children are making significant errors, return to the previous stage in calculation.

Our aim is that by the end of Y6 children use **mental methods (with jottings)** when appropriate, but for calculations that they cannot do in their heads, they use an efficient **formal written method** accurately and with confidence.