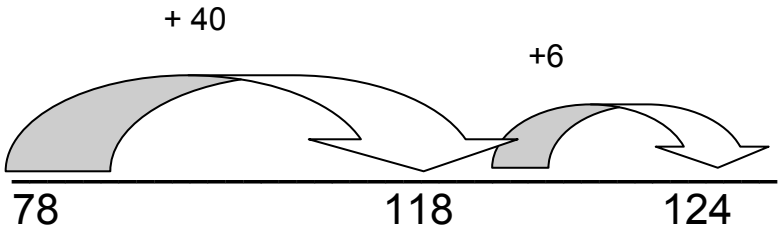
Addition - Year Three

- **Add numbers with up to three digits, using formal written method of columnar addition**

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

Further develop the use of the **empty number line** with calculations that **bridge 100:**

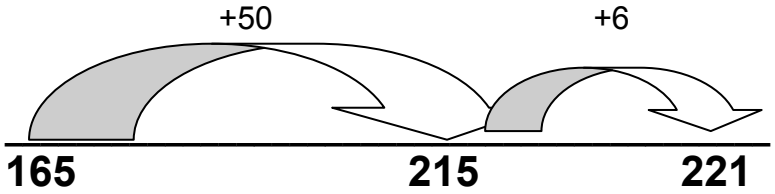
78 + 46 = 124



Use a **200 grid** to support counting on in tens and bridging 100…

… and with addition of a three-digit and a two -digit number:

165 + 56 = 221



Further develop the **partitioning method** with calculations that **bridge 100:**

85 + 37 = 80 + 5 + 30 + 7

80 + 30 = 110
5 + 7 = 12
110 + 12 = 122

85 + 37 = 122

The partitioning method can also be used with three-digit numbers.

Introduce the **expanded written method** with the calculation presented both horizontally and vertically (in columns).

Initially use calculations where it has not been necessary to bridge across the tens or hundreds:

63 + 32 = 95

$$\begin{array}{r} 60 + 3 \\ + \quad \underline{30 + 2} \\ 90 + 5 = 95 \end{array}$$

'Partition the numbers into tens and ones/units. Add the tens together and then add the ones/units together. Recombine to give the answer.'

Then…

$$\begin{array}{rrl} & 6\ 3 & \\ + & \underline{3\ 2} & \\ & 5 & (3 + 2) \\ + & \underline{9\ 0} & (60 + 30) \\ & 9\ 5 & \end{array}$$

Add the least significant digits (units) together first and then the tens in preparation for the formal written method.

This will lead into the **formal written method…**

$$\begin{array}{rr} & 6\ 3 \\ + & \underline{3\ 2} \\ & 9\ 5 \end{array}$$

Use the language of place value to ensure understanding: 'Three add two equals five. Write five in the units column. 60 add 30 equals 90. Write 9 (90) in the tens column.

NB Informal/mental methods would be more appropriate for numbers of this size, but use two-digit numbers when introducing the columnar method.

Then introduce calculations where it is necessary to bridge, returning to an **expanded method** initially:

68 + 24 = 92

$$\begin{array}{r} 60 + 8 \\ + \quad \underline{20 + 4} \\ 80 + 12 = 92 \end{array}$$

'Partition the numbers into tens and ones/units. Add the tens together and then add the ones/units together. Recombine to give the answer.'

Then…

$$\begin{array}{rl} & 6\ 8 \\ + & 2\ 4 \\ \hline & 1\ 2 \quad (8 + 4) \\ + & 8\ 0 \quad (60 + 20) \\ \hline & 9\ 2 \end{array}$$

Add the least significant digits (units) together first and then the tens in preparation for the formal written method.

If children are ready, introduce the **formal written method,** where it is necessary to 'carry' ten from the units to the tens column:

$$\begin{array}{rl} & 6\ 8 \\ + & 2\ 4 \\ \hline & 9\ 2 \\ & {\scriptstyle 1} \end{array}$$

Use the language of place value to ensure understanding: 'Eight add four equals 12. Write two in the units column and 'carry' one (10) across into the tens column. 60 add 20 and the ten that we 'carried' equals 90. Write 9 (90) in the tens column. 92 is the answer.

The digit that has been 'carried' should be recorded under the line in the correct column.

When children are confident, extend with examples where it is necessary to bridge across the tens and the hundreds:

76 + 47 = 123

$$\begin{array}{rl} & 70 + 6 \\ + & 40 + 7 \\ \hline & 110 + 13 = 123 \end{array}$$

'Partition the numbers into tens and ones/units. Add the tens together and then add the ones/units together. Recombine to give the answer.'

Then…

$$\begin{array}{rl} & 7\ 6 \\ + & 4\ 7 \\ \hline & 1\ 3 \quad (7 + 6) \\ + & 1\ 1\ 0 \quad (70 + 40) \\ \hline & 1\ 2\ 3 \end{array}$$

Add the least significant digits (units) together first and then the tens in preparation for the formal written method.

If children are ready introduce the **formal written method,** where it is necessary to 'carry' across the columns and bridge 100:

76 + 47 = 123

$$\begin{array}{r} {\scriptstyle 1\ 1\ \ } \\ 4\ 7 \\ +\ 7\ 6 \\ \hline 1\ 2\ 3 \end{array}$$

Use the language of place value to ensure understanding: 'Seven add six equals 13. Write three in the units column and 'carry' one (10) across into the tens column. 40 add 70 and the ten that we 'carried' equals 120. Write 2 (20) in the tens column and 'carry' one (100) across into the hundreds column (100).

The digits that have been 'carried' should be recorded under the line in the correct column.

If children are confident, further develop with the addition of a three- digit number and a two -digit number:

178 + 43 = 221

$$\begin{array}{r} {\scriptstyle 1\ 1\ \ } \\ 1\ 7\ 8 \\ +\ \ 4\ 3 \\ \hline 2\ 2\ 1 \end{array}$$

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