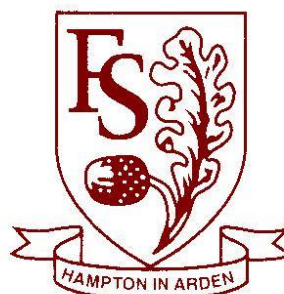
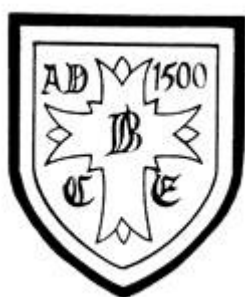
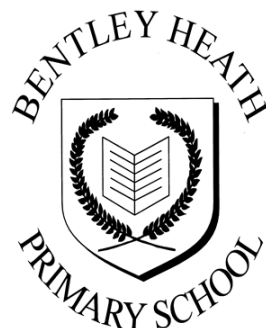


National Curriculum For Mathematics



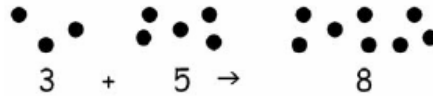
Calculation Policy

Routes through Addition

EARLY SKILLS - most children from foundation stage

- **Story around structure** - I have a set of 3 objects to start with and I get 5 more 'How many altogether?'
- Often modelled with **sets of 'things'** - essentially the story follows the same plot of 'have', 'more', 'altogether'
- Lots of **songs and rhymes**.
- Very **practical**.

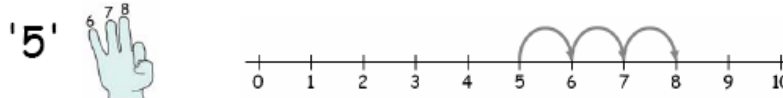
Count all - a child doing $3 + 5$ counts out three counters and then five counters and then finds the total by counting all the counters.



Count on from the first number - a child finding $3 + 5$ counts on from the first number: 'four, five, six, seven, eight'



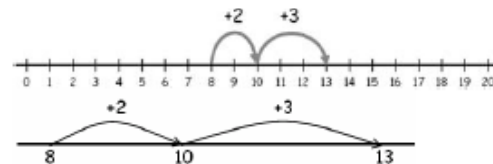
Count on from the larger number - $3 + 5$ a child chooses the larger number, even when it is not the first number, and counts on from there: 'six, seven, eight'



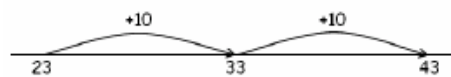
DEVELOPING NUMBER LINES - most children from year 1

- Children are able to **count on from the larger number**.
- First in **ones/ units** and then in **tens**.
- They can use a **marked number line** to perform addition calculations, then progress to using a partial, then **blank number line**.
- This provides a means of supporting and developing children's counting strategies with a **pictorial recording**.

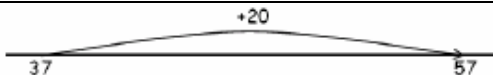
Bridging through 10 e.g. $8 + 5$



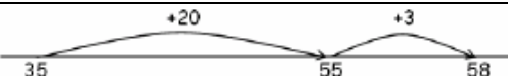
Counting in tens e.g. $20 + 23$



Counting in multiples of ten e.g. $37 + 20$ ($37 + 10 + 10 = 57$)



Counting in multiples of ten and ones e.g. $35 + 23$



PARTITIONING - most children from year 2 should understand and use

Partitioning both numbers into tens and ones, add the tens, then add the ones.

$$\begin{array}{l}
 \text{T O} + \text{T O} \\
 36 + 23 \\
 \text{T } 30 + 20 = 50 \\
 \text{U } 6 + 3 = 9 \\
 50 + 9 = 59
 \end{array}$$

WRITTEN METHOD FOR ADDITION

It is important that children's mental methods of calculation are practised and secured alongside their learning and use of an efficient written method for addition.

To add successfully, children need to be able to:

- recall all addition pairs to $9 + 9$ and complements in 10;
- add mentally a series of one-digit numbers, such as $5 + 8 + 4$;
- add multiples of 10 (such as $60 + 70$) or of 100 (such as $600 + 700$) using the related addition fact,
- knowledge of place value;
- Partition two-digit and three-digit numbers into multiples of 100, 10 and 1 in different ways.

EXPANDED METHOD - confident children from year 2

Introduce children to the expanded method of addition showing links with partitioning

$$46 + 27 =$$

$$\begin{array}{r} 46 \\ + 27 \\ \hline 6 + 7 = 13 \\ 40 + 20 = 60 \\ \hline 73 \end{array}$$

Move on to a layout showing the addition of the tens to the tens and the ones to the ones separately. To find the partial calculations **either the tens or the ones can be added first**, and the total of the partial calculations can be found by **adding them in any order**. As children gain confidence, ask them to **start by adding the ones digits first always**.

The addition of the tens in the calculation $47 + 76$ is described in the words 'forty plus seventy equals one hundred and ten', stressing the link to the related fact 'four plus seven equals eleven'.

The expanded method leads children to the more compact method so that they understand its structure and efficiency. The amount of time that should be spent teaching and practising the expanded method will depend on how **secure the children are in their recall of number facts and in their understanding of place value**.

Write numbers in columns
Adding ones first.

$$\begin{array}{r} 47 \\ + 76 \\ \hline 13 \\ 110 \\ \hline 123 \end{array}$$

Addition of decimals - begin to add 2 or more 3-digit sums of money. Know that decimal points should line up under each other, particularly when adding mixed amounts

$$\begin{array}{r} 5.36 \\ + 3.84 \\ \hline \pounds 9.20 \\ + + \end{array}$$

$$\begin{array}{r} 12.76 \\ 9.42 \\ + 3.85 \\ \hline \pounds 26.03 \\ + + + \end{array}$$

COMPACT METHOD - children from year 3 and year 4 onwards

In this method, recording is reduced further. **Carry digits are recorded below the line**, using the words 'carry ten' or 'carry one hundred', not 'carry one'. Carry digits are crossed out when added on.

Later, extend to adding three two-digit numbers, two three-digit numbers and numbers with different numbers of digits, and decimals.

Extending to decimals specifically more for year 4 - using the chosen method, add two or more decimal fractions with up to 4 digits and either one or two decimal places.

Children should be taught to use zero as a place holder.

Columnar addition remains efficient when used with larger whole numbers and decimals. Once learned, the method is quick and reliable.

$$\begin{array}{r} 47 \\ + 26 \\ \hline 73 \\ \hline 1 \end{array} \quad \begin{array}{r} 368 \\ + 423 \\ \hline 791 \\ \hline 1 \end{array} \quad \begin{array}{r} 36.8 \\ + 49.1 \\ \hline 85.9 \\ \hline 1 \end{array}$$

$$\begin{array}{r} 3587 \\ + 675 \\ \hline 4262 \\ \hline 111 \end{array} \quad \begin{array}{r} 65.84 \\ + 58.48 \\ \hline 124.32 \\ \hline 111 \end{array}$$