

Addition: Green (Y3)

Mental Work

Derive and recall

- addition facts for all numbers to 20, e.g. $9 + 8$, drawing on knowledge of inverse operations
- sums of multiples of 10, e.g. $50 + 80$
- pairs of 2-digit numbers with a total of 100, e.g. $32 + 68$, or $32 + \Delta = 100$ (use knowledge of pairs to 10)
- addition doubles for multiples of 10 to 100, e.g. $90 + 90$
- counting in steps of 4, 8, 50 and 100
- find 10 more or less than a given number.

Work mentally (with jottings if needed)

- Mentally calculate HTU + U, HTU + T, HTU + H
- add a 2-digit number to a multiple of 10, e.g. $50 + 38$ (partition: add tens and ones separately then recombine)
- add 2-digit numbers, e.g. $34 + 65$ (partition: count on in tens and ones)
- add near doubles, e.g. $18 + 16$, $60 + 70$ (partition: double and adjust, or add 10 or 20 and adjust)

Children should be encouraged to:

* **approximate** their answers before calculating

***consider if a mental calculation** would be appropriate **before** using written methods

***check their answers** after calculation using an appropriate strategy

Practical work

Base 10 materials may be a good way to support the horizontal partitioning methods shown below.

Using an analogue clock, children can start getting used to adding in 5-minute intervals, then in 15s and 30s, to calculate time intervals.

Number lines

Bridging through ten helps the children to become more efficient.

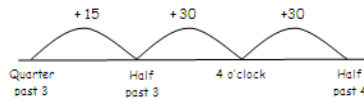
Children will continue to use empty number lines with increasingly large numbers, including compensation where appropriate.

Count on from the largest number irrespective of the order of the calculation.

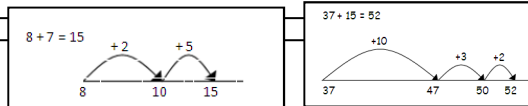
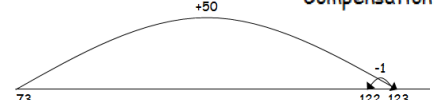
$$38 + 86 = 124$$



Quarter past 3 to half past 4



$$49 + 73 = 122$$



Recording

Expanded method in columns

Introduce the **significant digit** (in a 2-digit number it is the tens, in a 3-digit number the hundreds, etc.)

Move on to a layout showing the addition of the tens to the tens and the ones to the ones separately. Ensure children always add the ones digits first.

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.

Adding the ones first:

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

Column method: recording is reduced further continuing from expanded method in columns

Carry digits are recorded below the line, using the words 'carry ten' or 'carry one hundred, not 'carry one'.

Suggested progression:

Stage 1: TU + TU no carrying (total below 100)

Stage 2: TU + TU with carrying (total below 100)

Stage 3: TU + TU with carrying (total above 100)

Stage 4: TU + TU + TU with carrying (including more than one ten carried)

Stage 5: HTU + U first without then with carrying the ten

Stage 6: HTU + TU first without carrying, then with just the ten carried, then with the hundred carried, then both carried

Stage 7: HTU + HTU with different values being carried

Stage 8: two (or more) numbers with different numbers of digits; e.g. $456 + 54 + 1038$ where zero is used as a place holder and where it is implied, e.g. 456 has an implied zero place holder in the thousands place.

$$\begin{array}{r} 625 \\ + 48 \\ \hline 673 \\ 1 \end{array} \quad \begin{array}{r} 783 \\ + 42 \\ \hline 825 \\ 1 \end{array} \quad \begin{array}{r} 367 \\ + 85 \\ \hline 452 \\ 11 \end{array}$$

CHILDREN SHOULD NOT MOVE ON TO THE NEXT STAGE IF:

- 1) they are not ready
- 2) they are not confident