

# Calculation Policy

## Addition – Lower Key Stage 2

Missing number problems using a range of equations as in Year 1 and 2 but with appropriate, larger numbers.

### Partition into tens and ones

Partition both numbers and recombine.

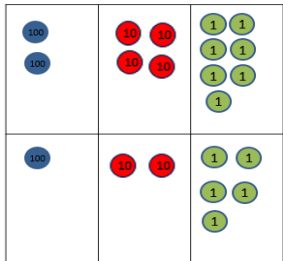
Count on by partitioning the second number only e.g.

$$\begin{aligned} 247 + 125 &= 247 + 100 + 20 + 5 \\ &= 347 + 20 + 5 \\ &= 367 + 5 \\ &= 372 \end{aligned}$$

Children need to be secure adding multiples of 100 and 10 to any three-digit number including those that are not multiples of 10.

### Towards a Written Method

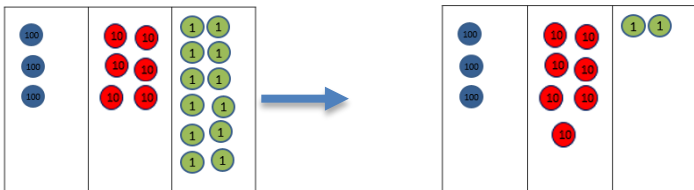
Introduce expanded column addition modelled with place value counters (Dienes could be used for those who need a less abstract representation)



$$\begin{aligned} 200 + 40 + 7 \\ 100 + 20 + 5 \\ 300 + 60 + 12 &= 372 \end{aligned}$$

$$\begin{array}{r} 247 \\ +125 \\ \hline 12 \\ 60 \\ 300 \\ \hline 372 \end{array}$$

Leading to children understanding the exchange between tens and ones.



Some children may begin to use a formal columnar algorithm, initially introduced alongside the expanded method. The formal method should be seen as a more streamlined version of the expanded method, not a new method.

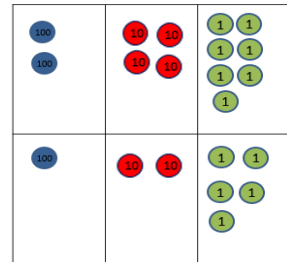
$$\begin{array}{r} 247 \\ +125 \\ \hline 372 \\ \hline 10 \end{array}$$

Missing number/digit problems:

**Mental methods** should continue to develop, supported by a range of models and images, including the number line. The bar model should continue to be used to help with problem solving.

### Written methods (progressing to 4-digits)

Expanded column addition modelled with place value counters, progressing to calculations with 4-digit numbers.

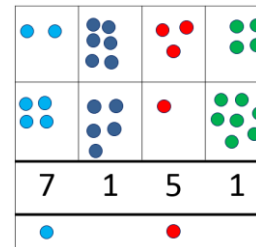


$$\begin{aligned} 200 + 40 + 7 \\ 100 + 20 + 5 \\ 300 + 60 + 12 &= 372 \end{aligned}$$

$$\begin{array}{r} 247 \\ +125 \\ \hline 12 \\ 60 \\ 300 \\ \hline 372 \end{array}$$

### Compact written method

Extend to numbers with at least four digits.



$$\begin{array}{r} 2634 \\ +4517 \\ \hline 7151 \\ \hline 1 \quad 1 \end{array}$$

Children should be able to make the choice of reverting to expanded methods if experiencing any difficulty.

Extend to up to two places of decimals (same number of decimal places) and adding several numbers (with different numbers of digits).

$$\begin{array}{r} 72.8 \\ + 54.6 \\ \hline 127.4 \\ \hline 1 \quad 1 \end{array}$$

## Year 3 objectives

### Statutory requirements

Pupils should be taught to:

- add and subtract numbers mentally, including:
  - a three-digit number and ones
  - a three-digit number and tens
  - a three-digit number and hundreds
- add and subtract numbers with up to three digits, using formal written methods of columnar addition and subtraction
- estimate the answer to a calculation and use inverse operations to check answers
- solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction.



## Year 3 guidance

### Notes and guidance (non-statutory)

Pupils practise solving varied addition and subtraction questions. For mental calculations with two-digit numbers, the answers could exceed 100.

Pupils use their understanding of place value and partitioning, and practise using columnar addition and subtraction with increasingly large numbers up to three digits to become fluent (see [Mathematics Appendix 1](#)).



## Year 4 objectives

### Statutory requirements

Pupils should be taught to:

- add and subtract numbers with up to 4 digits using the formal written methods of columnar addition and subtraction where appropriate
- estimate and use inverse operations to check answers to a calculation
- solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why.

## Year 4 guidance

### Notes and guidance (non-statutory)

Pupils continue to practise both mental methods and columnar addition and subtraction with increasingly large numbers to aid fluency (see [English Appendix 1](#)).

