

Addition - Year 1

+ = signs and missing numbers

Children need to understand the concept of equality before using the '=' sign. Calculations should be written either side of the equality sign so that the sign is not just interpreted as 'the answer'.

$$2 = 1 + 1$$

$$2 + 3 = 4 + 1$$

Missing numbers need to be placed in all possible places.

$$3 + 4 = \square$$

$$3 + \square = 7$$

$$\square = 3 + 4$$

$$7 = \square + 4$$

Counting and Combining sets of Objects

Combining two sets of objects (aggregation) which will progress onto adding on to a set (augmentation)



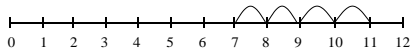
Understanding of counting on with a numbertrack.



Understanding of counting on with a numberline

(supported by models and images).

$$7 + 4$$



Addition - Year 2

Missing number problems e.g. $14 + 5 = 10 + \square$ $32 + \square + \square = 100$
 $35 = 1 + \square + 5$

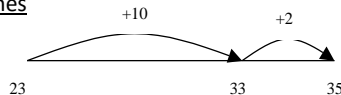
It is valuable to use a range of representations (also see Y1). Continue to use numberlines to develop understanding of:

Counting on in tens and ones

$$23 + 12 = 23 + 10 + 2$$

$$= 33 + 2$$

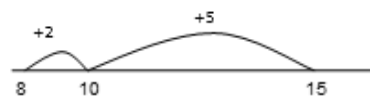
$$= 35$$



Partitioning and bridging through 10.

The steps in addition often bridge through a multiple of 10 e.g. Children should be able to partition the 7 to relate adding the 2 and then the 5.

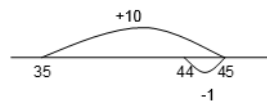
$$8 + 7 = 15$$



Adding 9 or 11 by adding 10 and adjusting by 1

e.g. Add 9 by adding 10 and adjusting by 1

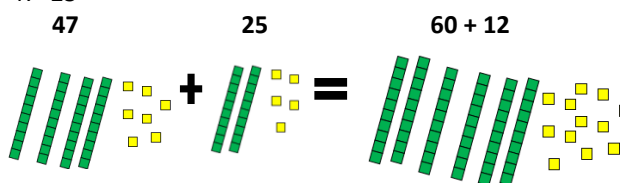
$$35 + 9 = 44$$



Towards a Written Method

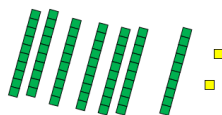
Partitioning in different ways and recombine

$$47 + 25$$



Leading to exchanging:

$$72$$



Expanded written method

$$40 + 7 + 20 + 5 =$$

$$40 + 20 + 7 + 5 =$$

$$60 + 12 = 72$$

$$\begin{array}{r} 40 + 7 \\ + 20 + 5 \\ \hline 60 + 12 = 72 \end{array}$$

Addition - Year 3

Ex

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.

$$247 + 125 = 247 + 100 + 20 + 5$$

$$= 347 + 20 + 5$$

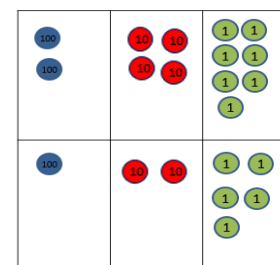
$$= 367 + 5$$

$$= 372$$

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)



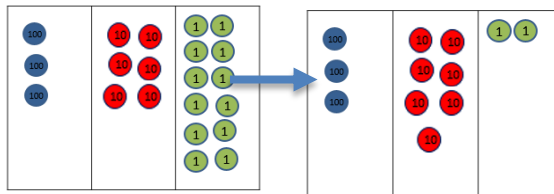
$$200 + 40 + 7$$

$$100 + 20 + 5$$

$$300 + 60 + 12 = 372$$

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

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.

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