Written Calculation Policy

Addition

Reviewed March 2021

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.

$3 + 4 = \square$ $\qquad$ $\square = 3 + 4$

$3 + \square = 7$ $\qquad$ $7 = \square + 4$

Counting on from 1st number

$5 +$ ⬤⬤⬤⬤⬤ ⬤ $= 12$

Understanding of counting on with a numbertrack.

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |

Understanding of counting on with a numberline, starting with largest no. (supported by models & images).

0 1 2 3 4 5 6 7 8 9 10 11 12

$7 + 4$

Counting and combining sets of objects
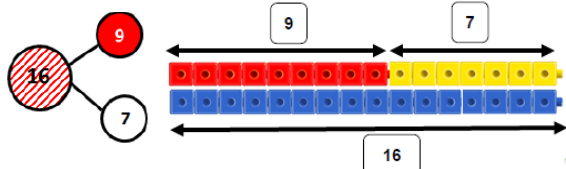
Column addition Method (2-digit by 1-digit no exchanging)

$15 + 3 =$

```
    T U
    1 5
  +   3
  _____
    1 8
```

$15 + 3 = 18$

Year 2

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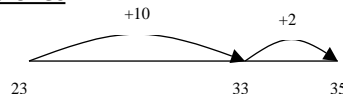
$32 + \square + \square = 100$

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

$23 + 12 = 23 + 10 + 2$

$\qquad = 33 + 2$

$\qquad = 35$

+10 $\qquad$ +2

23 $\qquad$ 33 $\qquad$ 35

Column addition Method (2-digit by 1-digit)
(Introduce exchanging practically)

$25 + 7 =$

```
    T U
    2 5
  +   7
    1
  _____
    3 2
```

Column addition Method (2-digit by 2-digit)
(with exchanging)

47 $\qquad$ 25 $\qquad$ 60 + 12

Include exchanging:

```
    T U
    4 7
  + 2 5
    1
  _____
    7 2
```

72

GDS children only to progress onto Column addition Method (3 digit by 2 or 3-digit).

Year 3

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

Partition into tens and ones

Children need to be secure adding multiples of 1000, 100 and 10 to any four-digit number including those that are not multiples of 10.

Column addition Method (3-digit by 3-digit)

Children should have a formal columnar algorithm, and be able to deal with exchanging from units or tens and understand the methodology.


```
  H T U
    2 4 7
  + 1 2 5
      1
  _____
    3 7 2
```

Leading to children understanding the exchange between ones and tens and also tens and hundreds.

Children, experiencing difficulty should be given plenty of practical experience with both denes and place value counters. Children should also have experience of dealing with columns that total 10 and have a secure understanding of the need to exchange the 10 but also make sure a 0 is added to hold the place value.

E.g.

```
  H T U
    3 4 7
  + 1 2 3
      1
  _____
    4 7 0
```

Obj Gui **Year 4** Ex	Obj Gui **Year 5** Ex	Obj Gui **Year 6** Ex
Missing number/digit problems: **Mental methods** should continue to develop, supported by a range of models and images, including the number line and bar models. **Column addition method** As year 3, progressing onto 4-digit by 4-digit 2634 + 4517 1 1 7151 Progress to column addition method when adding several whole numbers (with different numbers of digits). Ensure digits correctly aligned. 5146 278 + 375 22 2 2 58.21 Place value counters can be used alongside the column addition method to develop understanding of addition with decimal numbers, initially with one decimal place and then extend to up to two decimal places (same number of decimals places). 23.4 + 41.7 1 65.1 £53.46 + £21.65 1 1 £75.11	Missing number/digit problems: **Mental methods** should continue to develop, supported by a range of models and images, including the number line. Children should practise with increasingly large numbers to aid fluency e.g. 12462 + 2300 = 14762 . **Column addition methods** As year 4, progressing to larger numbers, aiming for both conceptual understanding and procedural fluency with columnar method to be secured. Continue calculating with decimals, including those with different numbers of decimal places., add O's to hold place value 123.670 50.466 21.500 2.725 2 1 1 198.361 **Problem Solving** Teachers should ensure that pupils have the opportunity to apply their knowledge in a variety of contexts and problems (exploring cross curricular links) to deepen their understanding. The bar model should continue to be used to help with problem solving	Missing number/digit problems: **Mental methods** should continue to develop, supported by a range of models and images, including the number line. **Column addition methods** As year 5, progressing to larger numbers, aiming for both conceptual understanding and procedural fluency with columnar method to be secured. Continue calculating with decimals, including those with different numbers of decimal places 17383.190 4670.128 3161.400 0.200 1 1 2 1 25214.918 **Problem Solving** Teachers should ensure that pupils have the opportunity to apply their knowledge in a variety of contexts and problems (exploring cross curricular links) to deepen their understanding. The bar model should continue to be used to help with problem solving. .