



# Rush Green Primary School

Addition Policy



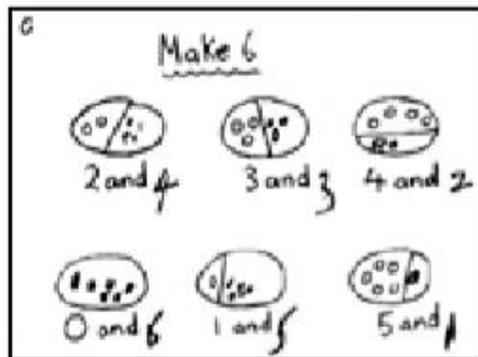
Rush Green Primary

## Progression through calculations for addition

- These standards are age-related expectations and therefore we expect the majority of children to achieve them.
- New learning is likely to be taught to groups rather than the whole class to acknowledge the different learning stages of the children.
- Children should understand that addition is commutative and therefore calculations can be rearranged, e.g.  $4 + 13 = 17$  is the same as  $13 + 4 = 17$ .
- Ensure that children understand the = sign means is the same as and that children see calculations where the equals sign is in a different position, e.g.  $3 + 2 = 5$  and  $5 = 3 + 2$ .
- Children should be encouraged to approximate before calculating and check whether their answer is reasonable.
- When teaching addition, the principles of concrete, pictorial and abstract (CPA) are followed throughout the whole school.

### YR

Children are encouraged to develop a mental picture of the number system in their heads to use for calculation. They should experience practical calculation opportunities using a wide variety of equipment, e.g. small world play, role play, counters, cubes etc. They develop ways of recording calculations using pictures, etc.



Children will see modelled recording of such calculations as  $2 + 4 = 6$  or  $6 = 2 + 4$ . Those who are ready may record their own calculations.

### Y1

Children will continue to use practical equipment, combining groups of objects to find the total by counting. Using their developing understanding of place value, they will move on to be able to use Dienes equipment to make teens numbers using separate tens and ones.

If possible, they can use two different colours of Dienes equipment so that the initial amounts can still be seen.

$$11 + 5 = 16$$



Children are expected to know and understand the numbers bonds to 20. Children are first introduced to number bonds to 10 and when confident will use the patterns found to understand the number bonds to 20.

For example:

$$\begin{array}{l} 6 + 2 = 8 \\ 5 + 4 = 9 \end{array} \quad \begin{array}{l} \longrightarrow \\ \longrightarrow \end{array} \quad \begin{array}{l} 16 + 2 = 18 \\ 15 + 4 = 19 \text{ etc...} \end{array}$$

## Y2

Children will continue to use Dienes equipment to support their calculations. They will record the calculations using their own drawings of the Dienes equipment (as slanted lines for the 10 rods and dots for the ones).

e.g.  $34 + 23 =$



$$34 + 23 = 57$$

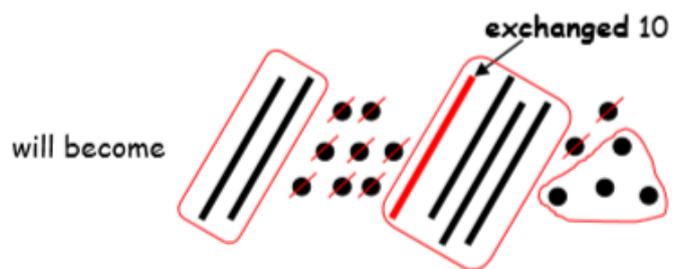
They would add the ones first and then count on the tens.

When the ones total more than 10, children should be encouraged to exchange 10 ones for 1 ten. This is the start of children understanding 'carrying' in vertical addition.

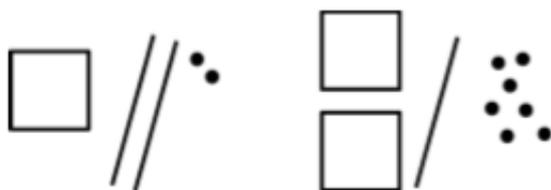
e.g.  $28 + 36 =$



$$28 + 36 = 64$$



This method can also be used with three digit numbers, e.g.  $122 + 217$

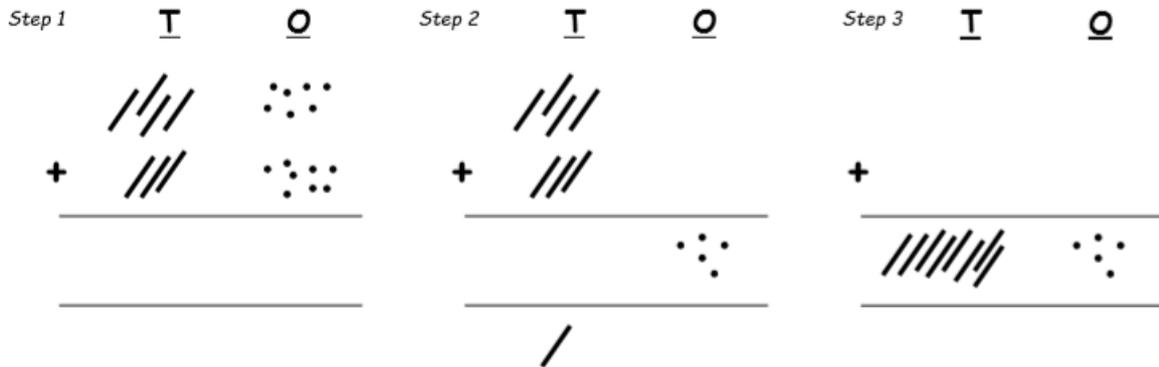


Children are expected to be fluent in number facts to 20 and then use related facts to 100.  
For example:

$$3 + 7 = 10 \quad \longrightarrow \quad 30 + 70 = 100$$

### Y3

Children will build on their knowledge of using Dienes equipment from Y2 and continue to use the idea of exchange. They can use a place value grid to support their knowledge of exchange between columns. Children should add the least significant digits first, and in an identical method to that from Y2, should identify whether there are greater than ten ones which can be exchanged for one ten.



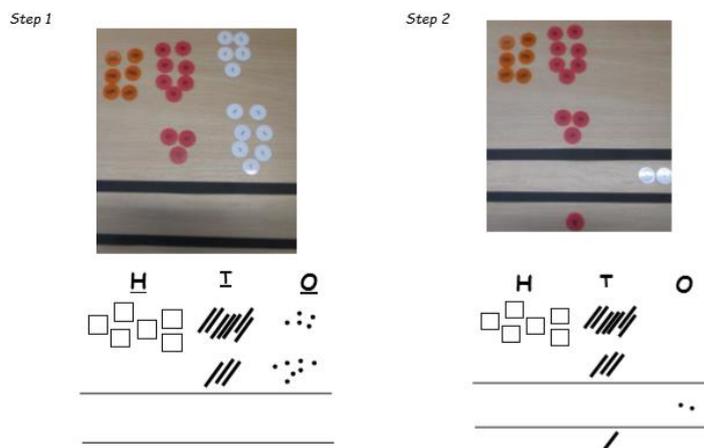
This practical method can be modelled or recorded alongside the written method.

$$\begin{array}{r}
 \text{T} \quad \text{O} \\
 4 \quad 7 \\
 + \underline{3 \quad 8} \\
 \underline{8 \quad 5} \\
 1
 \end{array}$$

They should also extend this method for three digit numbers.

### Y4

Children will move into Y4 continuing to use the taught methods from Y3.

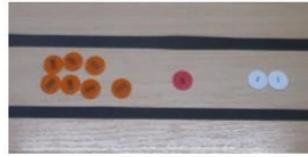


Step 3



$$\begin{array}{r}
 \text{H} \quad \text{T} \quad \text{O} \\
 \square \square \square \square \\
 \hline
 \square \quad / \quad \dots \\
 \hline
 \square
 \end{array}$$

Step 4



$$\begin{array}{r}
 \text{H} \quad \text{T} \quad \text{O} \\
 \square \square \square \square \\
 \hline
 \square \square \square \square \quad / \quad \dots \\
 \hline
 \square \square \square \square
 \end{array}$$

Leading to:

Using similar methods, children will:

- add several numbers with different numbers of digits;
- begin to add two or more three-digit sums of money, with or without adjustment from the pence to the pounds;
- know that the decimal points should line up under each other, particularly when adding or subtracting mixed amounts, e.g. £3.59 + 78p.

$$\begin{array}{r}
 \text{H} \quad \text{T} \quad \text{O} \\
 6 \quad 7 \quad 5 \\
 + \quad 3 \quad 7 \\
 \hline
 7 \quad 1 \quad 2
 \end{array}$$

$$\begin{array}{r}
 783 \\
 + \quad 42 \\
 \hline
 825 \\
 \hline
 1
 \end{array}$$

$$\begin{array}{r}
 367 \\
 + 285 \\
 \hline
 652 \\
 \hline
 11
 \end{array}$$

$$\begin{array}{r}
 321 \\
 + \quad 7 \\
 + \quad 48 \\
 \hline
 376 \\
 \hline
 1
 \end{array}$$

$$\begin{array}{r}
 \pounds 3.48 \\
 + \pounds 0.78 \\
 \hline
 \pounds 4.26 \\
 \hline
 1 \quad 1
 \end{array}$$

## Y5

Children should extend the carrying method to numbers with at least four digits.

$$\begin{array}{r} 587 \\ + 475 \\ \hline 1062 \\ \hline 11 \end{array}$$

$$\begin{array}{r} 3587 \\ + 675 \\ \hline 4262 \\ \hline 111 \end{array}$$

$$\begin{array}{r} 3121 \\ + 37 \\ + 148 \\ \hline 3306 \\ \hline 11 \end{array}$$

$$\begin{array}{r} 3.20 \\ + 2.88 \\ \hline 6.08 \\ \hline 1 \end{array}$$

Using similar methods, children will:

- add several numbers with different numbers of digits;
- begin to add two or more decimal fractions with up to three digits and the same number of decimal places;
- know that decimal points should line up under each other, particularly when adding or subtracting mixed amounts, e.g. 3.2 m + 280 cm.

## Y6

Children should extend the carrying method to number with any number of digits.

$$\begin{array}{r} 7648 \\ + 1486 \\ \hline 9134 \\ \hline 111 \end{array}$$

$$\begin{array}{r} 6584 \\ + 5848 \\ \hline 12432 \\ \hline 111 \end{array}$$

$$\begin{array}{r} 42 \\ 6432 \\ 786 \\ 3 \\ + 4681 \\ \hline 11944 \\ \hline 121 \end{array}$$

$$\begin{array}{r} 401.20 \\ + 26.85 \\ + 0.71 \\ \hline 428.76 \\ \hline 1 \end{array}$$

Using similar methods, children will:

- add several numbers with different numbers of digits;
- begin to add two or more decimal fractions with up to four digits and either one or two decimal places;

- know that decimal points should line up under each other, particularly when adding or subtracting mixed amounts, e.g.  $401.2 + 26.85 + 0.71$ .

By the end of year 6, children will have a range of calculation methods, mental and written. Selection will depend upon the numbers involved.

Children should not be made to go onto the next stage if:

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

Children should be encouraged to consider if a mental calculation would be appropriate before using written methods.