

Redhill Primary School

Written Calculation Strategies—Year 4

Addition

In year 4 we expect the children to be able to make their workings for addition more efficient. This will involve both whole numbers and, where appropriate, decimal values:

For example:

$$\begin{array}{r} 587 + 675 \\ + \quad 587 \\ \quad 675 \\ \quad \underline{12} \\ \quad 150 \\ \quad \underline{1100} \\ \underline{1262} \end{array}$$

$$\begin{array}{r} 13.7 + 19.6 \\ + \quad 13.7 \\ \quad \underline{19.6} \\ \quad \quad \underline{1.3} \\ \quad \quad 12 \\ \quad \quad \underline{20} \\ \underline{33.3} \end{array}$$

Towards the end of the year, once the children are confident with this method, it can be refined further to involve the process of "carrying" digits in to the next column.

$$\begin{array}{r} 587 + 675 \\ + \quad 587 \\ \quad \underline{675} \\ \underline{1262} \\ \quad \quad \underline{11} \end{array}$$

If children are unsure, revert back to the expanded methods of addition until they are ready to move on.

Subtraction

In year 4 the children are encouraged to refine written methods of calculating to using more formal methods of calculating (including the use of columns) This will only involve use of the EXPANDED METHOD.

$$\underline{786 - 254}$$

$$\begin{array}{r} 700 \quad 80 \quad 6 \\ - 200 \quad 50 \quad 4 \\ \hline 500 \quad 30 \quad 2 \end{array} = 532$$

This should begin without crossing the boundary, so the hundreds/tens/units in the first number should always be bigger than in the second number.

Once children are secure with the method, they should begin to use numbers which cross the boundary.

$$\underline{573 - 351}$$

$$\begin{array}{r} \\ \\ \\ - 300 \quad 50 \quad 4 \\ \hline 200 \quad 10 \quad 7 \end{array} = 217$$

To do this, children need to be able to partition numbers in to different ways, for example, understanding that $71 = 70 + 1$ and also $60 + 11$.

This is the process of exchanging—moving a ten from the tens column to the units column, not borrowing!

This method can be used with larger numbers and with decimal values.

Multiplication

In year 4 the children are encouraged to use the grid method to solve multiplication questions involving larger numbers. This involves splitting the numbers into parts and multiplying each part together. They will then be encouraged to use formal methods of addition to add the totals together. This will then extend to looking at HTU X U numbers, working in exactly the same way.

$$\underline{31 \times 22}$$

x	30	1	= 620	620
20	600	20	= 62	+ <u>62</u>
2	60	2		<u>682</u>

Once the children are confident with this method, they will move on to using a more formal method of expanded columns. This will involve the same process as the grid method (and links will need to be shown) but will be laid out in columns.

For example:

$$\underline{31 \times 22}$$

31	
x 22	
2	(2 x 1)
60	(2 x 30)
20	(20 x 1)
600	(20 x 30)
<u>682</u>	

$$\underline{31 \times 22 = 682}$$

This can be done with larger/smaller numbers, including HTU numbers - children should be referred back to the grid method if they are unsure.

$$\underline{31 \times 22}$$

Division

In Key Stage 2 the children are taught to complete division problems by counting up in chunks, from zero to the starting number. They use what they know by adding on in different size jumps. In year 4 this should be refined to make it as efficient as possible, using multiples of 10 wherever possible.

For example:

$$\underline{128 \div 8}$$

0

$$10 \times 8 = 80$$

80

$$5 \times 8 = 40$$

120

$$1 \times 8 = 8$$

128

$$\underline{136 \div 8 = 16}$$

This will be

extended to numbers which would include remainders:

$$\underline{125 \div 11}$$

0

$$10 \times 11 = 110$$

110

$$1 \times 11 = 11$$

121

R=4

125

$$\underline{125 \div 11 = 11 \text{ R } 4}$$