



# Formal Written Calculation Methods

Agreed school layouts for  
teachers and pupils

Please use the examples contained within to inform your teaching of maths strategies. Examples of the full range of strategies can be found in our guidance booklet. The examples which follow are demonstrated on squared paper to provide a realistic illustration which pupils should follow in their exercise books.

**From 2016, please note that commas need to be introduced when writing numbers larger than one thousand.** Key Stage 2 assessment guidance states: *'Where numbers in test questions have 4 or more digits, commas will be used as thousands separators for the 2016 mathematics tests onwards. Where pupils use a symbol other than a comma as a thousand separator in their answer, no marks will be awarded. Where a comma has been positioned incorrectly but the correct digits are in the correct order the mark(s) will be awarded.'*

Written recording layout of column addition:

$$\begin{array}{r} 366 \\ + 458 \\ \hline 824 \end{array}$$

$$\begin{array}{r} 2,457 \\ + 369 \\ \hline 2,826 \end{array}$$

Written recording layout of column subtraction:

$$\begin{array}{r} 2328 \\ - 179 \\ \hline 149 \end{array}$$

$$\begin{array}{r} 675643 \\ - 856 \\ \hline 6,787 \end{array}$$

Examples above show  $328 - 179$   
and  $7643 - 856$

- Always one digit per square.
- Clearly written digits.
- If children are at the earlier stages of use with these methods write H T U above digits in columns.
- These are 'calculations', 'sums' are additions!
- Commas to separate 4 or more digits.

Written recording layout of short multiplication:

- Note: If using expanded method first, model multiplying units first as this is a clearer move to short method.

$$\begin{array}{r} \text{E.g. } 54 \\ \times \quad 7 \\ \hline 28 \\ + 350 \\ \hline 378 \end{array}$$

However, mentally (or informally) some children may opt to hold the larger number in their head first, e.g.  $54 \times 7$  is  $50 \times 7$  (350) plus  $4 \times 7$  (28) = 378.

$$\begin{array}{r} 38 \\ \times 57 \\ \hline 266 \end{array} \quad (\text{short } \times)$$

$$\begin{array}{r} 286 \\ \times 29 \\ \hline 2574 \\ + 5720 \\ \hline 8294 \end{array} \quad (\text{long } \times)$$

Place 'carried' digit within answer space when needed as part of final addition so it does not get mixed up with others.

Written recording layout for chunking to divide:

$$174 \div 3$$

$$\begin{array}{r} 58 \\ 3 \overline{) 174} \\ - 150 \quad (3 \times 50) \\ \hline 24 \\ - 24 \quad (3 \times 8) \\ \hline 0 \end{array}$$

Remember,

$$\begin{array}{r} 6 \leftarrow \text{quotient} \\ 3 \overline{) 18} \\ \leftarrow \text{dividend} \end{array}$$

divisor

Written recording layout for short division:

$$\begin{array}{r} 97 \\ 3 \overline{) 291} \end{array}$$

$$\begin{array}{r} 82 \\ 9 \overline{) 738} \end{array}$$

With a decimal example:

$$\begin{array}{r} 10.3125 \\ 16 \overline{) 165.0000} \\ \underline{165} \phantom{000} \\ 5 \phantom{000} \\ \underline{5} \phantom{00} \\ 2 \phantom{00} \\ \underline{2} \phantom{0} \\ 4 \phantom{0} \\ \underline{4} \\ 8 \end{array}$$

Long division:  $5103 \div 21$

$$\begin{array}{r} 243 \\ 21 \overline{) 5103} \\ \underline{42} \phantom{00} \\ 90 \phantom{0} \\ \underline{84} \phantom{0} \\ 63 \\ \underline{63} \\ 0 \end{array}$$

} Showing 'carrying' for the subtractions

$$\begin{array}{r} 243 \\ 21 \overline{) 5103} \\ \underline{42} \phantom{00} \\ 90 \phantom{0} \\ \underline{84} \phantom{0} \\ 63 \\ \underline{63} \\ 0 \end{array}$$

} Assuming the subtractions have been calculated mentally.