

## Addition +

### Expanded Column Addition

$$\begin{array}{r} 863 \\ + 379 \\ \hline 112 \\ 130 \\ \hline 1100 \\ 1242 \end{array}$$

1. Line up the digits in columns, one digit per box.
2. Add the ones, then start a new row and add the tens and so on.
3. Combine the numbers to find the answer.

Encourage pupils to use correct place value but allow them to make connections with linked number facts if it supports their addition (e.g.  $6 + 7 = 13$ , so  $60 + 70 = 130$ )

### Columnar Addition (Column Method)

$$\begin{array}{r} 2078 \\ + 5364 \\ \hline 7442 \end{array}$$

1. Line up the digits in columns, one digit per box.
2. Beginning on the right with the digits that have the lowest value, find the total of each column, ensuring carried digits are recorded below the line and referred to as 'carry ten' 'carry one hundred' etc.

N.B. Return to expanded method in columns if necessary.

## Subtraction –

### Expanded Column Subtraction

$$\begin{array}{r} 38 \\ 15813 \\ - 2747 \\ \hline 6 \\ 40 \\ 800 \\ 1000 \\ \hline 1846 \end{array}$$

1. Line up the digits in columns, one digit per box.
  2. Beginning on the right with the ones, subtract the subtrahend (bottom number) from the minuend (top number) regrouping as necessary.
  3. Combine the numbers to find the answer.
- N.B. Refer to correct place value, making connections to aid pupils' understanding (e.g. 'We know that 15 subtract 7 is 8, so 1500 take away 700 equals 800')

### Columnar Subtraction (Column Subtraction)

$$\begin{array}{r} 7867 \\ - 5496 \\ \hline 2371 \end{array}$$

1. Line up the digits in columns, one digit per box, adding zeros as place holders if necessary.
2. Beginning subtract the on the right with the digits that have the lowest value, subtrahend (bottom number) from the minuend (top number), regrouping as necessary.

## Multiplication ×

### Mental Multiplication (Partitioning)

For this method, the multiplicand is partitioned into its parts and each part is then multiplied by the multiplier before combining the numbers to find the answer.

N.B. Avoid saying 'add zero/s' instead say, "We know 2 times 6 is 12, so 200 x 6 will be 1200 because it's a hundred times greater than 12."

### Short Multiplication (Expanded)

$$\begin{array}{r} 59 \\ \times 7 \\ \hline 63 \\ 350 \\ \hline 413 \end{array}$$

Before the traditional short multiplication method is introduced, the expanded version should be taught to allow pupils further consolidation of the process.

N.B. Pupils should refer to the actual values of the digits, so 50 x 7 not 5 x 7 although the relationship to 5 x 7 should be stressed.

$$\begin{array}{l} 247 \times 6 = 1482 \\ 200 \times 6 = 1200 \\ 40 \times 6 = 240 \\ 7 \times 6 = 42 \\ \hline 1482 \end{array}$$

Regular practice will be needed in Year 4 to ensure all pupils can recall times tables (and linked division facts) up to 12 x 12.

## Division ÷

$$\begin{array}{r} 104 \text{ r } 3 \\ 6 \overline{) 627} \end{array}$$

Work out how many times the divisor will divide into each digit of the dividend, starting from the left, carrying over any remainders. If the majority of pupils are struggling to divide successfully, use models and images (e.g. place value grid) to illustrate the method more clearly.

### Gradation of difficulty in division for Year 4:

1. HTU ÷ O (no carrying, no remainder)  
 $848 \div 2 = 424$
2. HTU ÷ O (no carrying, with remainder)  
 $962 \div 3 = 320 \text{ r } 2$
3. HTU ÷ O (with carrying, no remainder)  
 $639 \div 9 = 71$
4. HTU ÷ O (with carrying, with remainder)  
 $813 \div 7 = 116 \text{ r } 1$
5. Zeros in the quotient  
 $836 \div 4 = 209$

