

## **Calculations at Clinton**

Written calculation methods changed significantly with the advent of the Numeracy Strategy in 1999. These methods build on the mental maths skills children learn throughout their schooling, forming a smooth transition from mental to written.

Consistency within schools is vital so children don't get confused, learning new methods from one year to the next. We have our own policy which demonstrates the progression in calculation methods we use, so children can progress smoothly from simple to more complex but refined methods.

This booklet is designed to help parents to support their children in their written calculation methods.

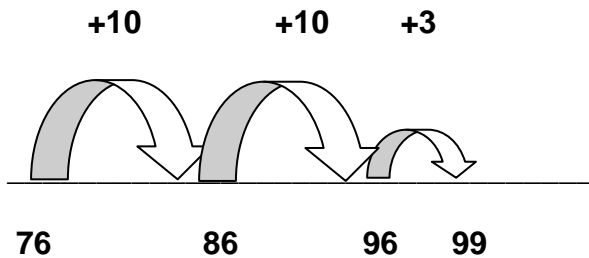
## STAGES IN ADDITION

### Informal counting methods

Add informal methods. Counting songs and rhymes and pictorial addition.

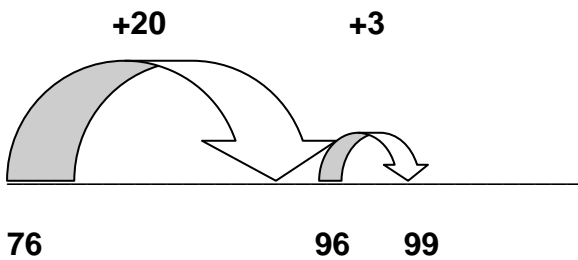
### Use of blank number lines

$$76 + 23$$



When children are confident they may move on to adding multiples of 10.

$$76 + 23$$



Vertical layout, expanded working, moving to adding the least significant digit first:

$$\begin{array}{r} 47 \\ +76 \\ \hline 13 \\ \underline{110} \\ 123 \end{array} \qquad \begin{array}{r} 368 \\ +493 \\ \hline 11 \\ 150 \\ \underline{700} \\ 861 \end{array}$$

Vertical layout, contracting the working to a compact efficient form:

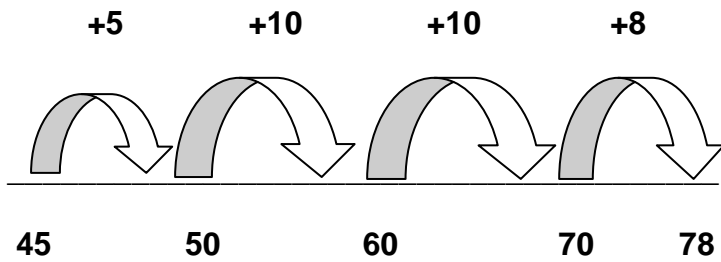
$$\begin{array}{r} 47 \\ +76 \\ \hline 123 \\ 11 \end{array} \qquad \begin{array}{r} 368 \\ +493 \\ \hline 861 \\ 11 \end{array}$$

### Bigger numbers and decimals

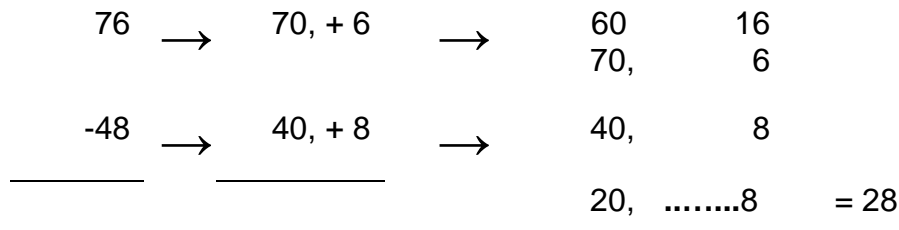
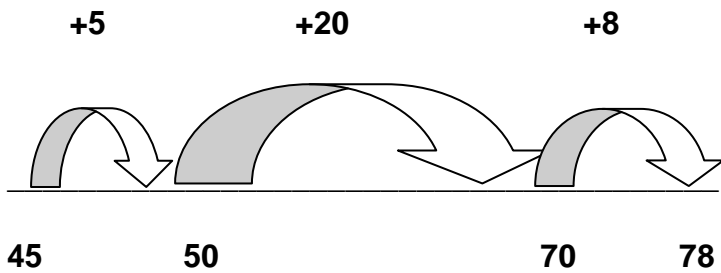
When considering moving on to more difficult calculations it is advisable to return to an expanded form of calculation, so that children are conversant with their numbers and not worried by new methods.

# STAGES IN SUBTRACTION

$78 - 45 =$



$78 - 45 =$



$$\begin{array}{r}
 6 \ 1 \\
 7 \ 6 \\
 - 4 \ 8 \\
 \hline
 2 \ 8 \\
 \hline
 \end{array}$$

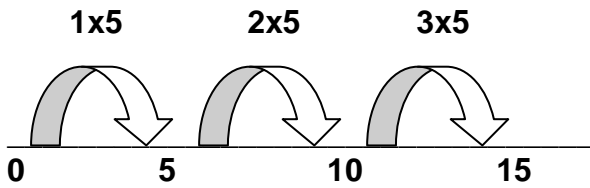
## Bigger numbers and decimals

When considering moving on to more difficult calculations it is advisable to return to an expanded form of calculation, so that children are conversant with their numbers and not worried by new methods.

## STAGES IN MULTIPLICATION

Using a number line for repeated addition

$$3 \times 5 = 15$$



Mental maths using partitioning :  $38 \times 7$

$$38 \times 7 = (30 \times 7) + (8 \times 7) = 210 + 56 = 266$$

Grid layout:  $38 \times 7$

|   |     |    |     |
|---|-----|----|-----|
| x | 30  | 8  |     |
| 7 | 210 | 56 | 266 |

Extend to bigger numbers:  $56 \times 27$

$$56 \times 27 = (50 + 6) \times (20 + 7)$$

|    |      |     |      |
|----|------|-----|------|
| x  | 50   | 6   |      |
| 20 | 1000 | 120 | 1120 |
| 7  | 350  | 42  | 392  |
|    |      |     | 1512 |

Vertical format, expanded working

$$\begin{array}{r} 38 \\ \times 7 \\ \hline 56 \quad (8 \times 7) \\ 210 \quad (30 \times 7) \\ \hline 266 \end{array}$$

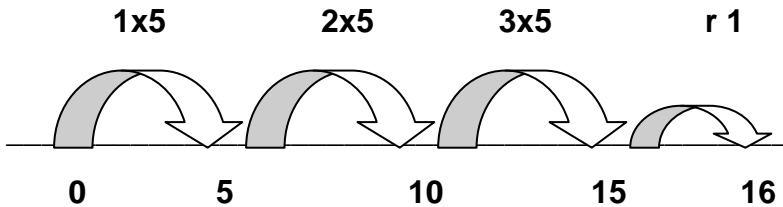
Vertical multiplication compact method

$$\begin{array}{r} 38 \\ \times 7 \\ \hline 266 \\ 5 \end{array}$$

## STAGES IN DIVISION

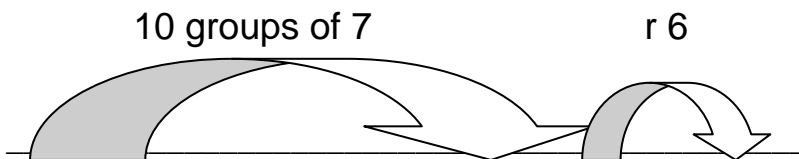
Practical sharing using equipment  
Add sharing demonstration  
Move from sharing to grouping

$$16 \div 5 = 3 \text{ r } 1$$



It may be helpful before beginning the chunking method to use a blank number line to illustrate large chunks of the divisor.

$$76 \div 7 =$$



Informal methods using multiples of the divisor or 'chunking'

$$\begin{array}{r} 72 \div 5 \\ - 50 \quad (10 \times 5) \\ \hline 22 \\ - 20 \quad (4 \times 5) \\ \hline 2 \end{array}$$

Answer:  $10 + 4 = 14$   
14 remainder 2

$$\begin{array}{r} 256 \div 7 \\ - 70 \quad (10 \times 7) \\ \hline 186 \\ - 140 \quad (20 \times 7) \\ \hline 46 \\ - 42 \quad (6 \times 7) \\ \hline 4 \end{array}$$

Answer:  $10 + 20 + 6 = 36$   
36 remainder 4

## Extend to decimals with up to 2 places

$$\begin{array}{r} 87.5 \\ - 70.0 \quad (10 \times 7) \\ \hline 17.5 \\ - 14.0 \quad (2 \times 7) \\ \hline 3.5 \\ - 3.5 \quad (0.5 \times 7) \\ \hline 0.0 \end{array}$$

Answer:  $10 + 2 + 0.5 = 12.5$   
12.5

Some children may also be taught the compact method:

$$\begin{array}{r} 36 \text{ r}4 \\ 7 \overline{) 256} \end{array}$$