



Moorgate Calculation

Year 4

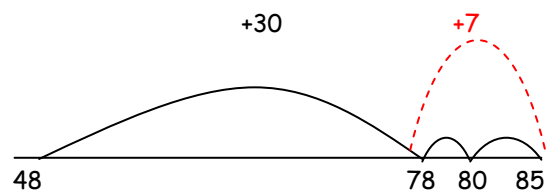
Help at Home

ADDITION

In Years 3 and 4, children continue to develop two main methods of adding - the number line and partitioning

The number line

$$48 + 37 =$$



As a jotting, it might look like this:

$$48 + 37$$

$$48 + 30 = 78$$

$$78 + 7 = 85$$

Or

$$48 + 30 + 7 = 85$$

Or

$$40 + 30 =$$

$$8 + 7 =$$

ADDITION

In Year 3, children used two main methods of adding - the number line and partitioning. These are now developed to be column addition

Column addition

A. Single 'carry' in units

Adding the ones first

$$\begin{array}{r} \text{TU} \\ 67 \\ + 24 \\ \hline 11 \\ 80 \\ \hline 91 \end{array}$$

B. 'Partition' in units and tens

$$\begin{array}{r} 50 \quad 8 \\ + 80 \quad 7 \\ \hline 130 \quad 15 \\ \hline 145 \end{array}$$

Over time, this progresses to:

Refine over time to adding the ones digits first consistently, with harder calculations

$$457 + 76$$

$$\begin{array}{r} 457 \\ + 76 \\ \hline 13 \\ 120 \\ 400 \\ \hline 533 \end{array}$$

Then

$$538 + 286$$

$$\begin{array}{r} 538 \\ + 286 \\ \hline 14 \\ 110 \\ 700 \\ \hline 824 \end{array}$$

Once children are secure in this, they can use:

$$58 + 87$$

$$\begin{array}{r} 58 \\ + 87 \\ \hline 145 \\ 11 \end{array}$$

Then

$$457 + 76$$

$$\begin{array}{r} 457 \\ + 76 \\ \hline 533 \\ 11 \end{array}$$

Then

$$538 + 286$$

$$\begin{array}{r} 538 \\ + 286 \\ \hline 824 \\ 11 \end{array}$$

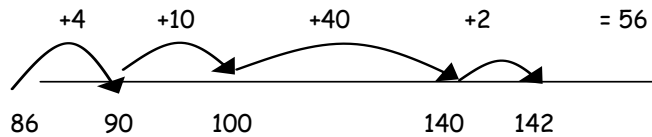
Use the words
'carry ten' and
'carry hundred',
not 'carry one'

SUBTRACTION

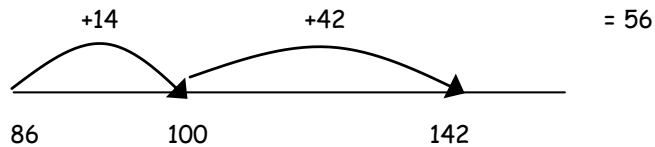
The empty number line helps to record or explain the steps in mental subtraction. It is an ideal model for counting back and bridging (going over) ten, as the steps can be shown clearly. It can also show counting up from the smaller to the larger number to find the difference

Subtraction by counting up

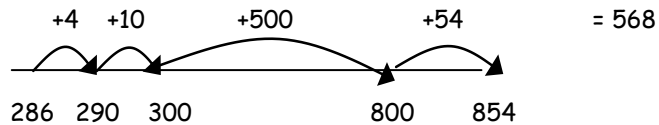
$$142 - 86$$



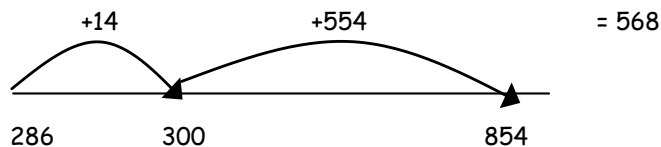
Or, in fewer steps:



$$854 - 286$$



Or, as a more efficient method:



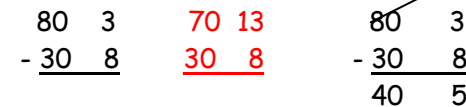
SUBTRACTION continued...

This method is very important as it secures your child's understanding of the value of each number. It is a crucial step.

Expanded method

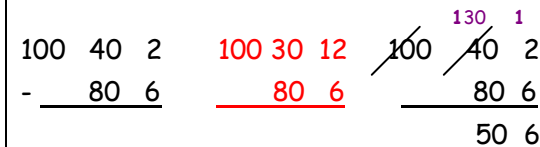
Your child will be introduced to this method, but will need to split/partition numbers into tens and units, and **exchange** tens for ones

$$83 - 38$$

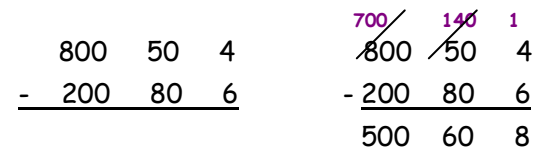


Exchange from hundreds to tens and tens to ones

$$142 - 86$$

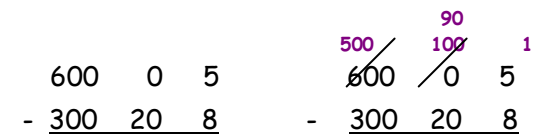


$$854 - 286$$



Use some examples which include the use of zeros

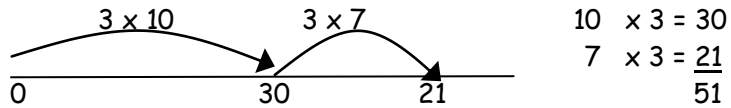
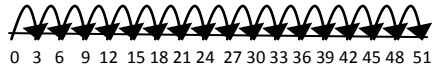
$$605 - 328$$



MULTIPLICATION

In Year 3, your child was encouraged to use jottings:

$$3 \times 17$$



This then leads to the Grid Method:

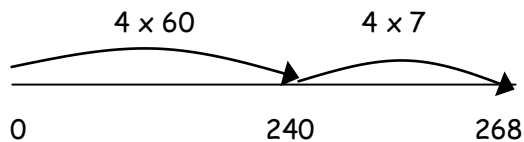
$$\begin{array}{r} \times \quad 10 \quad 7 \\ 3 \quad \boxed{30} \quad \boxed{21} \\ \hline = 51 \end{array}$$

These jottings can be extended to numbers over 100

Eg. $4 \times 67 =$

$$\begin{array}{r} 60 \quad + \quad 7 \\ \downarrow \quad \quad \downarrow \\ \times 4 \quad \quad \quad \times 4 \\ \hline 240 \quad \quad 28 \\ \hline = 268 \end{array}$$

OR on a number line:



OR written out:

$$60 \times 4 = 240$$

$$7 \times 4 = \underline{28}$$

$$268$$

OR in Grid method

$$\begin{array}{r} \times \quad 60 \quad 7 \\ 4 \quad \boxed{240} \quad \boxed{28} \\ \hline = 268 \end{array}$$

MULTIPLICATION continued...

The Grid is then moved on to vertical multiplication during Years 4 and 5. Some children will only be ready for jottings and grid method throughout Year 4.

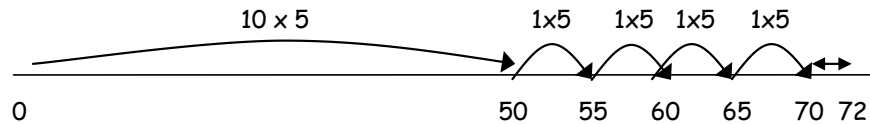
Grid method	Vertical multiplication
4×67 $4 \quad \begin{array}{ c c } \hline 60 & 7 \\ \hline 240 & 28 \\ \hline \end{array} = 268$ <p style="text-align: center;">It can be used for more complex calculations:</p> 7×89 $7 \quad \begin{array}{ c c } \hline 80 & 9 \\ \hline 560 & 63 \\ \hline \end{array} = 623$	4×67 $\begin{array}{r} 67 \\ \times 4 \\ \hline 28 \\ \hline 240 \\ \hline \underline{268} \end{array}$ <div style="border: 2px solid purple; border-radius: 15px; padding: 5px; width: fit-content; margin: 10px auto;"> <p style="text-align: center;">Place the 'carry' digit below the line</p> </div> 7×89 $\begin{array}{r} 89 \\ \times 7 \\ \hline 63 \\ \hline 560 \\ \hline \underline{623} \end{array}$

DIVISION

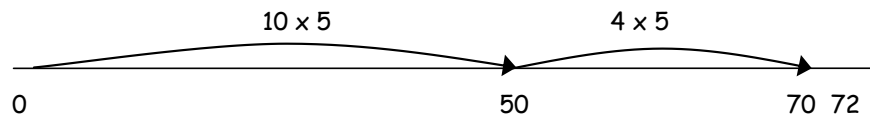
During Year 4, your child will move on from using a number line to start to use 'chunking' (short division).

Number line

$$72 \div 5 = 14 \text{ r } 2$$



Or a more efficient



Chunking

When chunking we repeatedly take away multiples or 'chunks' of the starting number.

$$51 \div 3 = 17$$

$$\begin{array}{r} 51 \\ -30 \\ \hline 21 \\ -21 \\ \hline 17 \end{array} \quad \begin{array}{l} 10 \times 3 \rightarrow \\ 7 \times 3 \end{array}$$

$$87 \div 3 = 29$$

$$\begin{array}{r} 87 \\ -30 \\ \hline 57 \\ -30 \\ \hline 27 \\ -15 \\ \hline 12 \\ -12 \\ \hline 29 \end{array} \quad \begin{array}{l} 10 \times 3 \\ 10 \times 3 \\ 5 \times 3 \\ 4 \times 3 \end{array}$$

OR

$$\begin{array}{r} 87 \\ -60 \\ \hline 27 \\ -27 \\ \hline 29 \end{array} \quad \begin{array}{l} 20 \times 3 \\ 9 \times 3 \end{array}$$

The methods included in this booklet are taken from Moorgate Calculation Procedure.

Staff use these as guidance, so you will be supporting your child in the same ways.

All children learn at different paces. Some will be using strategies from lower in school, and others will progress to the next ones. This booklet is provided as a guide only, but if you would like a copy of the years below/ above your child's school year, please come and see your class teacher. They will be happy to discuss this with you.