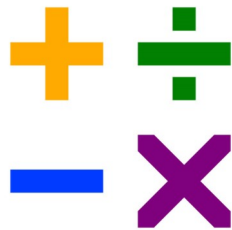


If you have questions about any of the information in this booklet please contact Le Murier on 246660



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Addition

Over the years the ways of teaching maths have changed, as has the name. We now call it Numeracy, which is about using our maths skills in everyday situations.

This booklet shows the progression and the different methods that are used in the teaching of addition — one of the four rules of number within computation.



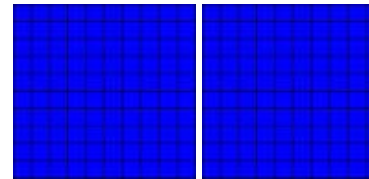
Addition

Combining sets to make totals $(4 + 2 = 6)$

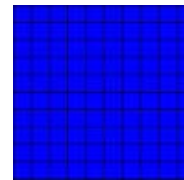


Some questions we ask:
 How many apples are there in each group?
 Which group is bigger, which group is smaller?
 Which group has more apples, which group has less apples?
 How many apples are there all together?
 (for this the students can push the apples together to count them).
 How many apples would there be if you added one/two more?

Then we add the hundreds

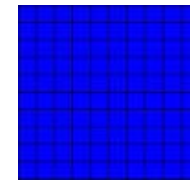


+



= 3 hundreds

+



1 hundred carried from the tens

= 4 hundreds = 400

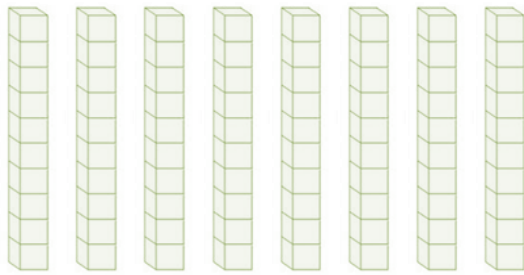
$$\begin{array}{r} 286 \\ + 139 \\ \hline 425 \end{array}$$

So

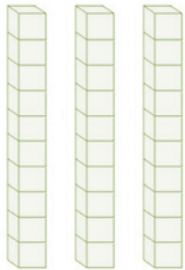
$$\begin{array}{r} 286 \\ + 139 \\ \hline 425 \\ 1 \end{array}$$

Then we add the tens

$$\begin{array}{r} 286 \\ + 139 \\ \hline 2 \\ 11 \end{array}$$



+



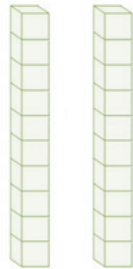
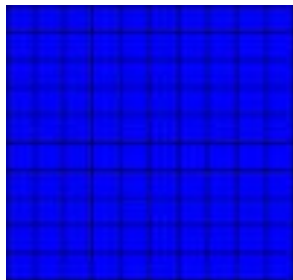
= 11 tens +



1 ten
carried
from
the
units

= 12 tens

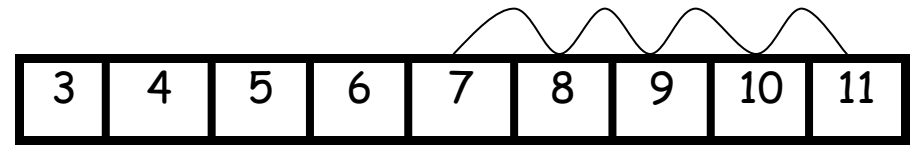
= 120



The 2 tens go in the answer and the one hundred is carried

Stepping along a number track

Number track showing $7 + 4 = 11$ or $4 + 7 = 11$



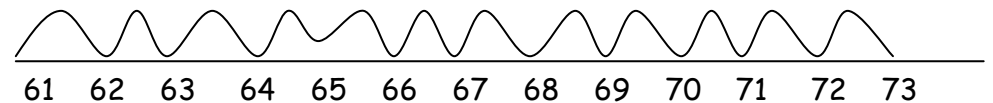
When the students are confident in using equipment for adding, they then move onto a number track as shown above. They start by putting the biggest number on the number track and then they count on the smallest number. This reinforces that $7 + 4$ is the same as $4 + 7$. This is called 'counting on'.

When the numbers get bigger we use a number line and 100 square. The 100 square can also be used to show patterns.
numbers

Jumps along a number line

When using bigger numbers, the students still put the biggest number on the number line and count on the smaller number to get the answer. This is shown below.

Number line to show $61 + 12 = 73$ $12 + 61 = 73$



Jumps along a number line with marked intervals (10)

0	1	2	3	4	5	6	7	8	9
10	11	12	13	14	15	16	17	18	19
20	21	22	23	24	25	26	27	28	29
30	31	32	33	34	35	36	37	38	39
40	41	42	43	44	45	46	47	48	49
50	51	52	53	54	55	56	57	58	59
60	61	62	63	64	65	66	67	68	69
70	71	72	73	74	75	76	77	78	79
80	81	82	83	84	85	86	87	88	89
90	91	92	93	94	95	96	97	98	99

Examples of using a number square

$52 + 12 = 64$ Start on 52 and then count on 12 to get the answer. When confident in this, it is moved on to adding on the 10 by going down one row and then adding the units.

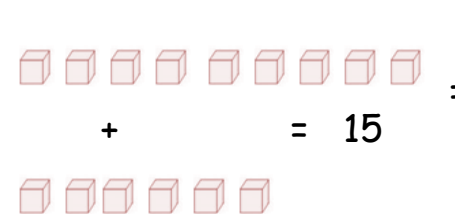
$76 + 23 = 99$ Start on 76, go down two rows to add the 20 (2 lots of 10s) and then along 3 squares to add the units (3).

As the students start to add larger numbers vertically, carrying of digits is introduced. The language of 'carrying units, tens and hundreds' is used. We do not say 'carry one' as this could cause confusion as to the value of the digit being carried. Equipment will still be used until the students are confident to do without and understand what they are doing. See the example below:

$$\begin{array}{r} 286 \\ + 139 \\ \hline 425 \\ \hline 11 \end{array}$$

Firstly we add the units

Units



The 5 units go in the answer and the one ten is carried

$$\begin{array}{r} 286 \\ + 139 \\ \hline 5 \\ \hline 1 \end{array}$$

The partitioning method can also be used for adding decimals

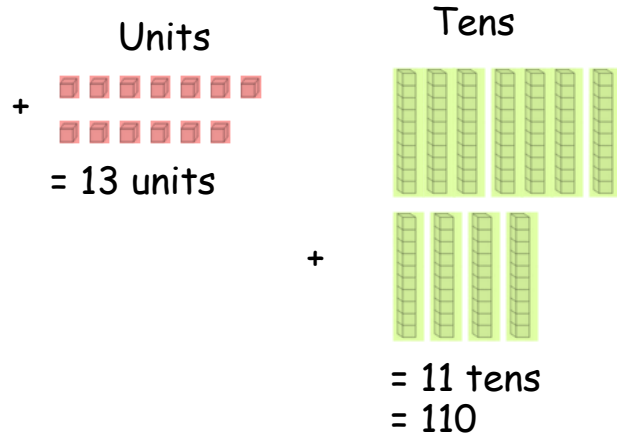
$$\begin{aligned}
 8.56 + 6.72 &= 8 + 6 = 14 \\
 &\quad 0.5 + 0.7 = 1.2 \\
 &\quad 0.06 + 0.02 = 0.08 \\
 14 + 1.2 + 0.08 &= 15.28
 \end{aligned}$$

Vertical Addition

When the students are confident in partitioning, the vertical addition method is introduced. In this method the units column is added first and we use equipment such as rods and money, as before, to demonstrate this method. See the following examples:

$$47 + 76 =$$

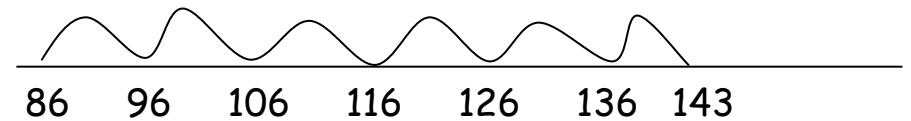
$$\begin{array}{r}
 47 \\
 + 76 \\
 \hline
 13 \\
 + 110 \\
 \hline
 123
 \end{array}$$



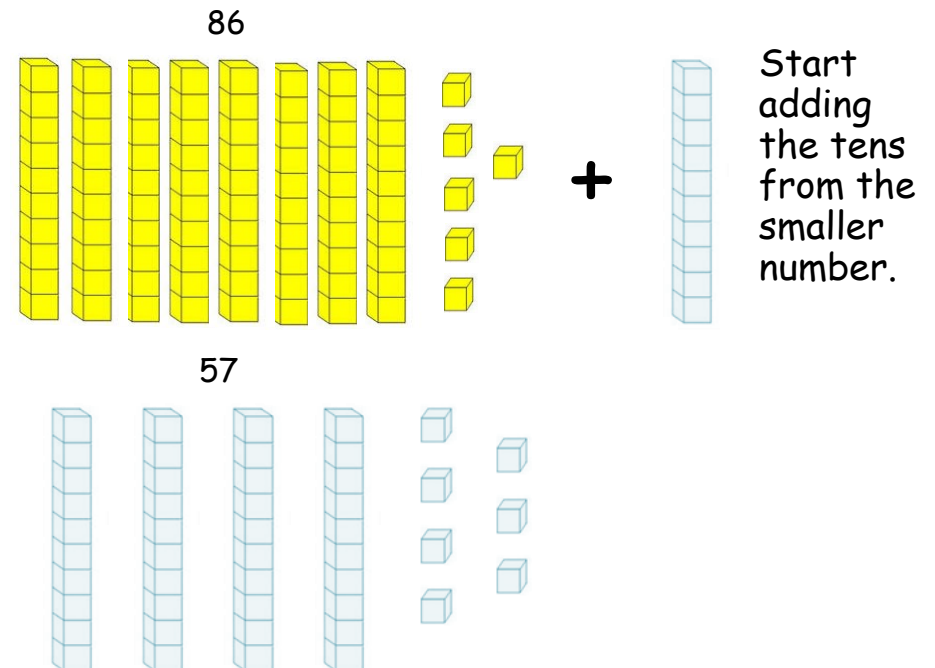
Using a number square helps us to understand using a number line when adding together numbers with two digits i.e.

$$\begin{array}{c}
 \text{T U} \\
 86 + 57 = 143 \\
 \text{HT U}
 \end{array}$$

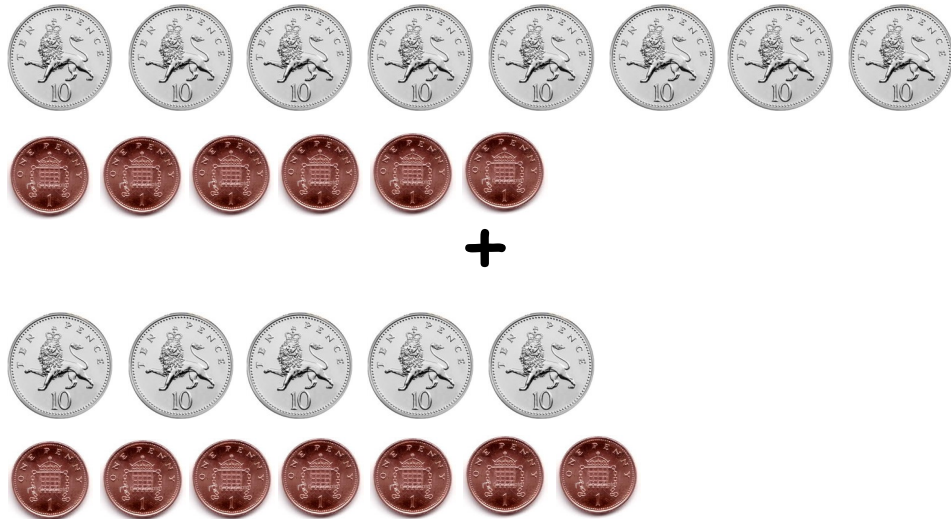
Number Line TU + TU (86 + 57 = 143 57 + 86 = 143)



We start by adding the 10s onto the biggest number and when all the 10s have been added we then add the units.



We can also use money to show this. ($86 + 57 = 143$)



This would then progress to the example shown below;



Partitioning (splitting the numbers)

When the students are confident with using the number line and equipment, we then introduce the written sums as follows.

$$86 + 57 = 86 + 50 = 136 + 7 = 143$$

Other ways to partition (split) the numbers to complete the sum are as follows

$$\begin{aligned} 86 + 57 &= 80 + 50 = 130 \\ 6 + 7 &= 13 \\ 130 + 13 &= 143 \end{aligned}$$

These written methods can be used for adding much larger numbers. Examples are:

$$\begin{aligned} 625 + 48 &= 600 \\ 20 + 40 &= 60 \\ 5 + 8 &= 13 \\ 600 + 60 + 13 &= 673 \end{aligned}$$

$$\begin{aligned} 587 + 475 &= 500 + 400 = 900 \\ 80 + 70 &= 150 \\ 7 + 5 &= 12 \\ 900 + 150 + 12 &= 1062 \end{aligned}$$

Don't forget to start counting from the biggest number.