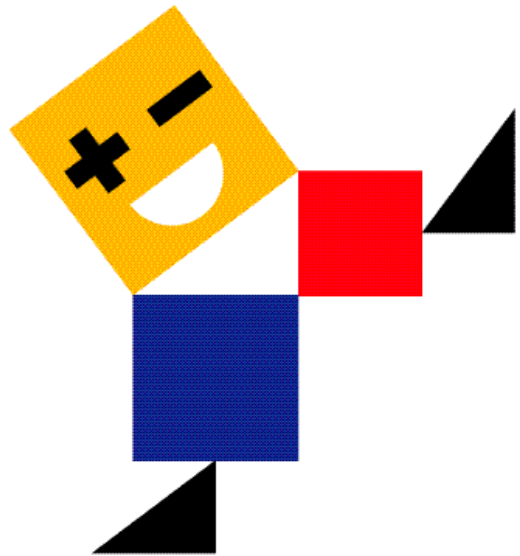




# Milton Primary School

*Guidance on  
calculation  
approaches for  
parents*

Addition



## **Milton Primary School – Guidance on calculation approaches for parents.**

This booklet has been written in order to help you understand how the four operations of addition, subtraction, multiplication and division are taught in our school and to give you some ideas of how to help your child with their work.

One of the most valuable things you can do with your child is talk to them about mathematics, when out shopping, playing games involving numbers, cooking etc. Talk, particularly linked to everyday situations, is central to encouraging good mathematical understanding. Above all, listen to your child explaining the approach that he or she selects. Avoid leading your child to an approach you remember from school, however tempting this may be, and instead try to keep in mind the progression that is set out in this document.

**It is also worth mentioning that the different stages in the progression are developmental, so children move through the stages based on their individual progress. Moving a child too rapidly to the final compact approach, before the child is ready, can impede progress rather than be supportive.**

### **Progression in written addition**

Before children move to written recording, they will need lots of practical experience of addition. For instance, if you ask a child to show you 5 and 2 more, or 3 plus 1, or 1 add 4, they can use the teddies, counters or number tracks to do it. They will also be developing their use of mathematical vocabulary to explain what they have done.

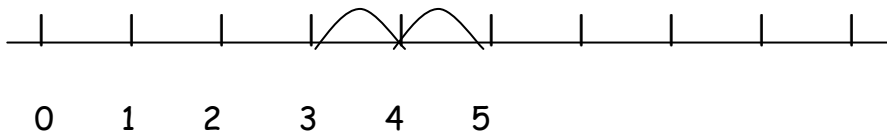
Recording practical activities at foundation stage and through Key Stage 1.

e.g. I have 3 sweets, then I get one more

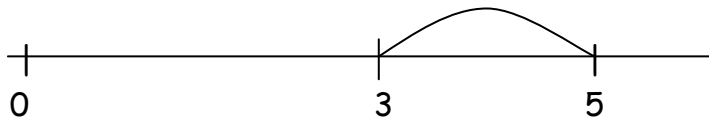
() () () ()

As well as using objects, children will begin to use number tracks and number lines and then hundred squares.

Children will use numbered number lines to record jumps, for example for  $3+2$ , before recording on blank number lines.



or as 3 and 2 more



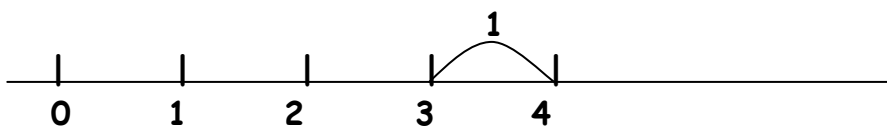
### Recording number sentences

When ready, children will still work practically with equipment and real objects, but now can record their explanation of what they have done as a conventional number sentence. Children will still record with drawings and number lines on a frequent basis, and whenever they are learning new concepts or starting to use a wider range of numbers they will need to return to using these easily understood and explained methods of recording.

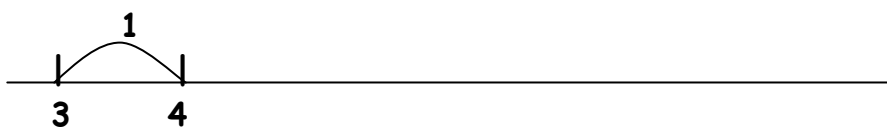
Using a conventional number sentence:

$$3+1=4 \text{ or } 4=3+1$$

As well as on a numbered number line:



Then on a blank number line:



## Mental methods

Children need to develop their use of jottings to support mental calculation. These jottings may be as drawings, number lines or number sentences.

For instance, a common-used strategy is to group together the tens and units parts of numbers, which is known as partitioning:

$$\begin{aligned} 36 + 45 &= 30 + 40 + 6 + 5 \\ &= 70 + 11 \\ &= 81 \end{aligned}$$

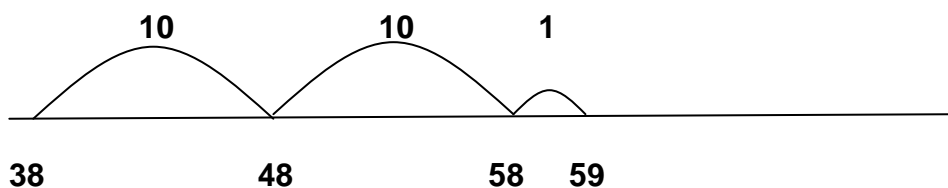
or

$$\begin{aligned} 36 + 45 &= 36 + 40 + 5 \\ &= 76 + 5 \\ &= 81 \end{aligned}$$

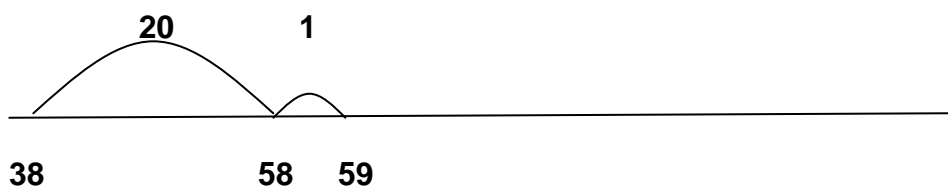
These jottings for partitioning would be used with 2-digit and some simple 3-digit calculations.

Instead of partitioning both numbers, the child can count on in multiples of 100, 10 or 1. This works work well on a number line and is built upon through Year 2, as illustrated below.

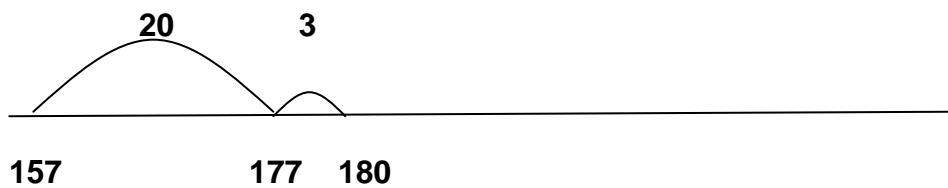
**38 + 21**  
In jumps of ten



**38 + 21**  
Blocking



$157 + 23$



or

any jumps on the number line, in steps of 100, 10, 1 or multiples of these, depending on the pupil's mental strategies and ability.

### Vertical addition

In Year 3 or in Year 4 children may begin to record addition calculations vertically, adding numbers in columns, beginning with the units and then adding the tens. The vocabulary used will always be whole number place value vocabulary, so 54 would be 50 and 4, never 5 tens and 4 ones or units.

Once children are very confident with this method of recording they may extend it to 3-digit numbers, providing their understanding of place value is sufficient to support this.

$$\begin{array}{r} \phantom{+} \phantom{3} \phantom{6} \phantom{8} \\ + \phantom{3} \phantom{6} \phantom{8} \\ \hline \phantom{+} \phantom{3} \phantom{6} \phantom{8} \\ \phantom{+} \phantom{3} \phantom{6} \phantom{8} \\ \phantom{+} \phantom{3} \phantom{6} \phantom{8} \\ \hline \phantom{+} \phantom{3} \phantom{6} \phantom{8} \end{array} \begin{array}{l} \\ \\ (8 + 3) \\ (60 + 90) \\ (300 + 400) \end{array}$$

### Compact standard addition

It is possible to record the vertical method more quickly by making a note of multiples of 10 or 100 rather than writing it all out. This method would **not normally be used before Year 5**, and even then there is **no hurry** to move to this. It is more important that children are confident using a method that for them is efficient and accurate and that they still use the correct vocabulary of partitioning the 68 into 60 and 8 and the 26 into 20 and 6, adding 8 and 6 to

