Addition Mission 2

Following the methods explored last week for Key Stage 1, this week we will be exploring how children in Key Stage 2 perform addition calculations using concrete (physical) resources and visual representations (pictures).

Year 3

In Year 3 we tend to use the following vocabulary when teaching children to add: part, whole, hundreds, tens, ones, estimate, partition, recombine, difference, decrease, near multiple of 10 and 100, inverse, rounding,

When adding pairs of 2- and 3-digit numbers, children need to use equipment first to support their understanding of place value (their understanding of the value of digits in a number e.g. in 54, the 5s digit is worth 50, not 5). Children to progress gradually to three digit + three digit starting without carrying and gradually moving towards carrying

Year 3 children use dienes apparatus and a grid to add. You can see how arranging it this way it naturally progresses to the written way you may be familiar with...

They also use place value counters and working drawings – see below...

Year 3 children are also taught how to use bar models to support their understanding. This can be especially helpful when tackling word or reasoning problems...

Bar Model to support understanding of problem solving:

A man sold 230 balloons at a carnival in the morning. He sold another 86 balloons in the evening. How many balloons did he sell in all?
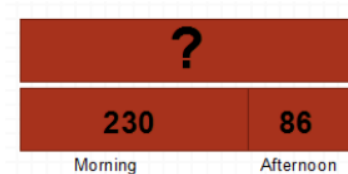
Year 4

In Year 4 we tend to use the following vocabulary when teaching children to add: part, whole, add, addition, sum, more, plus, increase, sum, total, altogether, double, near double, how many more to make..? how much more? ones boundary, tens boundary, hundreds boundary, thousands boundary, tenths boundary, hundredths boundary, inverse, how many more/fewer? Equals sign, is the same as.

The children in Year 4 start to add numbers with up to 4-digits. Following work using place value counters in Years 2 and 3 they move on from this to representing their work using a standard written method that you will be used to seeing – column addition (in blue). We start with the children using dienes to support them and with lots of discussion about the value of each digit. They can use the same principles to add decimal numbers.

Children use bar models to find missing digits. It is important for children to use the bar in this way to encourage the use of it to aid with problem solving.

This is not a form of getting the correct answer but helping to guide children to the correct operation.

Year 5

In Year 5 we tend to use the following vocabulary when teaching children to add: part, whole, tens of thousands boundary, as well as vocabulary explored in previous years.

The children in Year 5 add numbers with more than 4-digits, including decimals. We use practical apparatus such as place value charts and place value counters to aid understanding when dealing with decimals.
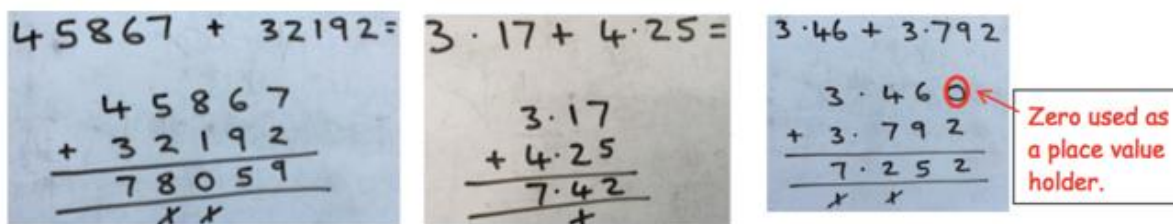
Year 5 children also use bar models, which aids understanding when dealing with problem solving activities.

MacDonalds sold £9957.68 worth of hamburgers and £1238.5 worth of chicken nuggets. How much money did they take altogether?

?	
£957.68	£1238.5

Year 6

In Year 6 we tend to use the following vocabulary when teaching children to add: part, whole, as well as vocabulary explored in previous years.

Year 6 children add decimal numbers with up to 3 decimal places. They have usually had the experience with practical apparatus and visual representations to allow them to quickly move to the abstract, as shown below. However, it is still worthwhile to use resources to aid understanding.

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  2 3 · 3 6 1
      9 · 0 8 0
  5 9 · 7 7 0
+     1 · 3 0 0
  9 3 · 5 1 1
  2 1     2
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Adding several numbers with different numbers of decimal places (including money and measures):

- Tenths, hundredths and thousandths should be correctly aligned, with the decimal point lined up vertically including in the answer row.

Empty decimal places should be filled with zero to show

Children in Year 6 also use bar models to add…

Jack went on holiday. His flight cost £70.50, the hotel £1295 and spending money £427.89. How much did Jack spend on his holiday?

?		
£70.50	£427.89	£1295

You can see that when children are ready, they move from using the resources to drawing visual representations and then to abstract numbers. If children move to quickly to the abstract or don't have experience of the resources they may not understand the maths behind the concept. This is where, as adults we can go wrong sometimes, as we forget the journey we made to get to our own understanding or were taught a procedure rather than actually understanding what is going on mathematically.

Anyway, I hope that you have found this insight into how we teach addition useful. Next time we will explore how we teach subtraction in Key Stage 1.

Mr Wheat