

Subtraction Stations

Following my previous explanation of how we perform addition calculations using concrete (physical) resources and visual (pictorial) representations, we are now going to explore how we carry out subtractions in Key Stage 1. An explanation of the subtraction into Key Stage 2 will follow next week.

Reception Class

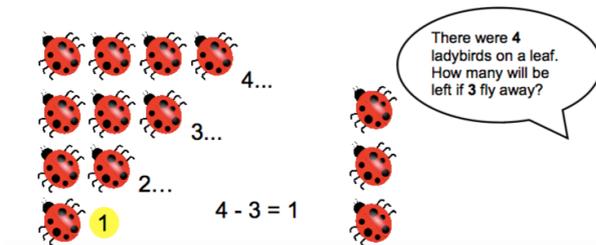
In Year R we tend to use the following vocabulary when teaching children to subtract: part, whole, equal to, take, take away, less, minus, subtract, leaves, difference between, how many more, how many fewer / less than, most, least, count back , how many left, how much less is_?

Year R children need to learn how to count backwards. A number line is useful for this.

- Use objects to subtract two single-digit numbers by counting back to find the answer.
- The first step into subtraction is to learn how to count backwards.



Children will then utilise this strategy to solve simple subtractions:



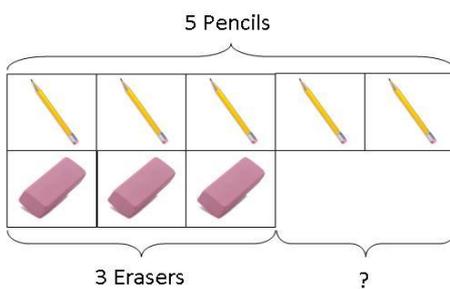
They use 10 frames like the one below. 10 frames are easy to make. You can use anything to represent the number – milk bottle tops re particularly useful. They would make the arrangement below with milk bottle tops and subtract 4 of the tops to get the answer.



$$8 - 4 = \underline{\quad}$$



The children also use visuals to solve problems e.g. how many more pencils are there than rubbers?



As with addition, one of the best things you can do to prepare children for the mathematical world is to get them to subitise – to immediately recognise a number. We do this, for example, using dice. We immediately know that the number rolled is a 5, as we have experience of the arrangement of dots. Children in Year R need to recognise the value of numbers at speed.

Year 1

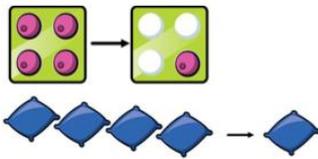
In Year 1 we tend to use the following vocabulary when teaching children to subtract: part, whole, subtraction, subtract, take away, distance between, difference between, more than, minus, less than, equals = same as, most, least, pattern, odd, even, digit.

The children are still taught how to use resources to aid their understanding, but move on to using visual representations that they or their teachers draw using working drawings e.g.

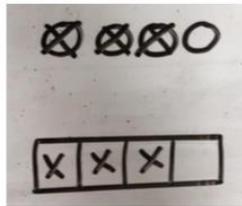
Children in Year 1 physically 'take away' objects from a whole amount, they draw the amount and cross off what they are 'taking away' and also draw part/whole and bar models (as per the picture far right below)

Physically taking away and removing objects from a whole (ten frames, Numicon, cubes and other items such as beanbags could be used).

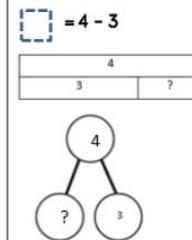
$$4 - 3 = 1$$



Children to draw the concrete resources they are using and cross out the correct amount. The bar model can also be used.



$$4 - 3 =$$



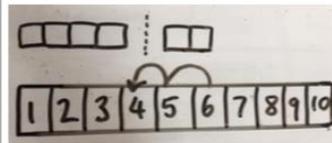
Children in Year 1 also count back using a number line or a drawing that they make.

Counting back (using number lines or number tracks) children start with 6 and count back 2.

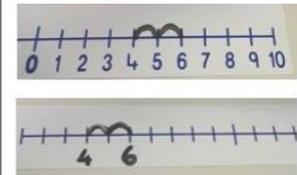
$$6 - 2 = 4$$



Children to represent what they see pictorially e.g.



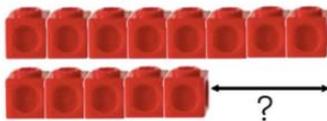
Children to represent the calculation on a number line or number track and show their jumps. Encourage children to use an empty number line



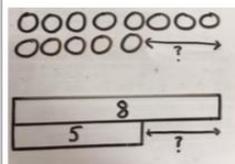
The children progress from Reception to do a lot more work finding the difference. To do this they use counters, drawings (difference bar models (see middle picture below)) and 10 frames.

Finding the difference (using cubes, Numicon or Cuisenaire rods, other objects can also be used).

Calculate the difference between 8 and 5.



Children to draw the cubes/other concrete objects which they have used or use the bar model to illustrate what they need to calculate.



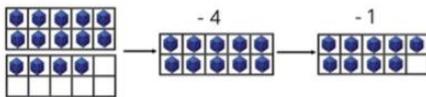
Find the difference between 8 and 5.

$$8 - 5, \text{ the difference is } \square$$

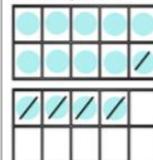
Children to explore why $9 - 6 = 8 - 5 = 7 - 4$ have the same difference.

Making 10 using ten frames.

$$14 - 5$$



Children to present the ten frame pictorially and discuss what they did to make 10.



Children to show how they can make 10 by partitioning the subtrahend.

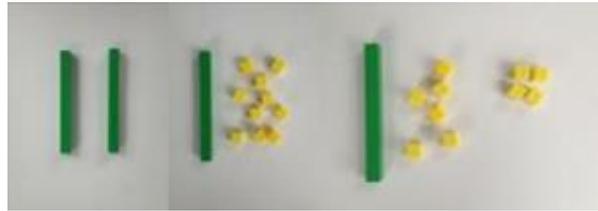
$$14 - 5 = 9$$



$$14 - 4 = 10$$

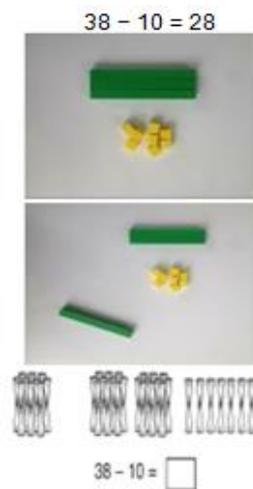
$$10 - 1 = 9$$

When subtracting using Dienes Year 1 children are taught to regroup a ten rod for 10 ones and then subtract from those ones (see below)...the second green 'rod' of 10 is swapped for 10 yellow 'ones'. 4 of the ones are then taken away.



$$20 - 4 = 16$$

Year 1 children also subtract multiples of 10 (numbers in the 10 x table). Using the vocabulary of 1 ten, 2 tens etc alongside 10, 20, 30 is very important here as pupils need to understand that it is a 10 not a 1 that is being taken away



Year 2

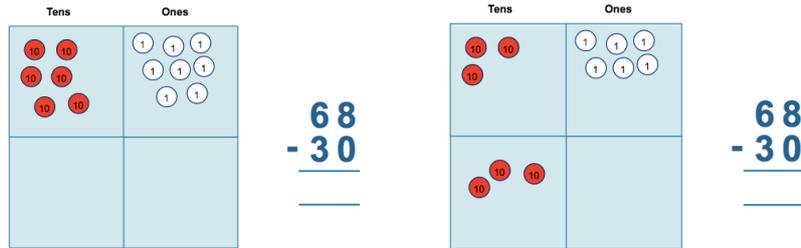
In Year 2 we tend to use the following vocabulary when teaching children to subtract: part, whole, Subtraction, subtract, take away, difference, difference between, minus tens, ones, partition, near multiple of 10, tens boundary, Less than, one less, two less... ten less...

In Year 2 the children use objects and pictures to subtract 1-digit numbers from 2-digit numbers e.g.

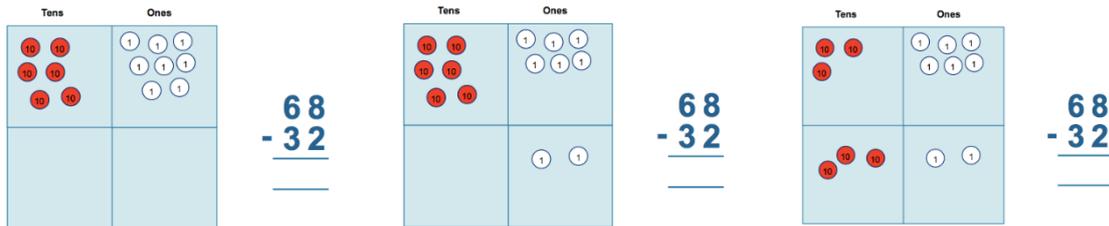
<p>Column method using base 10. 48-7</p> <table border="1"> <tr> <th>10s</th> <th>1s</th> <th>10s</th> <th>1s</th> </tr> <tr> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td>4</td> <td>1</td> </tr> </table>	10s	1s	10s	1s							4	1	<p>Children to represent the base 10 pictorially.</p> <table border="1"> <tr> <th>10s</th> <th>1s</th> </tr> <tr> <td></td> <td></td> </tr> <tr> <td>4</td> <td>1</td> </tr> </table>	10s	1s			4	1	<p>Column method or children could count back 7.</p> <table border="1"> <tr> <td></td> <td>4</td> <td>8</td> </tr> <tr> <td>-</td> <td></td> <td>7</td> </tr> <tr> <td></td> <td>4</td> <td>1</td> </tr> </table>		4	8	-		7		4	1
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As you can see they need to be able to have experience with resources and also visuals before they are ready to perform calculations the way we recognise (far right).

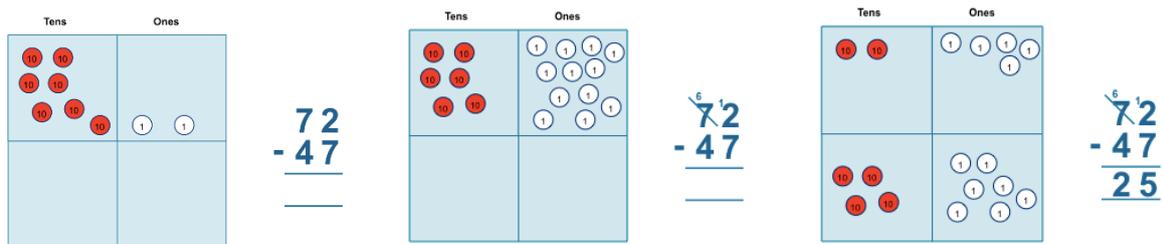
Year 2 children use place value counters and grids to subtract 10s from 2-digit numbers.



You can see from the way that these are arranged, following the process from left to right, that it is a precursor to and necessary step before formal column subtraction (subtraction by decomposition).



Greater Depth:



Year 2 children are also taught how to use the inverse to check their answers. They do this by using bar models e.g.

76		?	
23	?	23	53

$$76 - 23 = 53$$

$$\text{so } 53 + 23 = 76$$

You can see that, as with addition, when they are ready, they move from using the resources to drawing visual representations and then to abstract numbers. If children move too 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 subtraction in KS1 useful. Next week we will explore how we teach subtraction in Key Stage 2.

Mr Wheat