SUBTRACTION METHODS

STAGE 1 (From EYFS)

Early experiences of subtraction begin with oral and practical work. Number rhymes and songs are an important starting point for developing an understanding of one less than, as is counting back from 10, 20 and beyond. Through role play and number stories, children are encouraged to explore subtraction and 'taking away', in real life situations.

When ready, pupils will begin to use objects, including Numicon pegs and shapes, to solve simple subtraction calculations and to 'find the difference', later recording their work.

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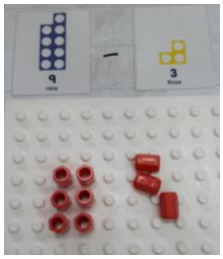
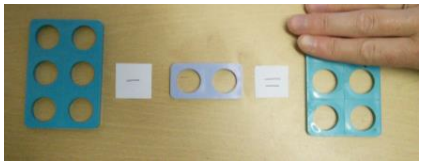




8 - 3 = 5 9 – 3 = 6 6 – 2 = 4

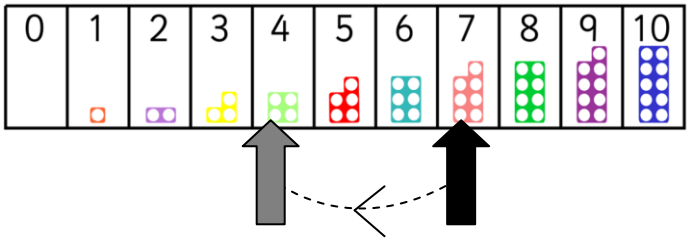
WAYS TO SUPPORT YOUR CHILD:

- Explore opportunities for real life subtraction with your child, eg. I have 5 strawberries and eat 2, how many do I have left? I have 2 cups for 4 people, how many more do I need?
- Use a range of vocabulary when talking about addition, eg. 'take away', 'less than', 'find the difference', 'how many are left'.
- If you have Numicon at home, encourage your child to play with the shapes to encourage familiarity and prepare them for formal calculations.
- Sing songs and number rhymes with your child (see YPS Number Rhymes booklet, iTunes and YouTube for ideas!).

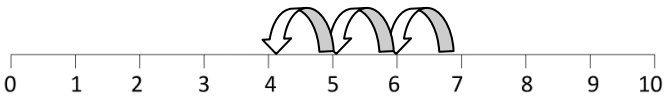
STAGE 2 (From EYFS / Y1)

From EYFS / Year 1, Numicon number tracks and other number lines are introduced to support children in their mental calculations. Children will begin to use these by moving their finger back along the line, and then later drawing in the jumps they make.

7 – 3 = 4



Using a number track



Using a number line

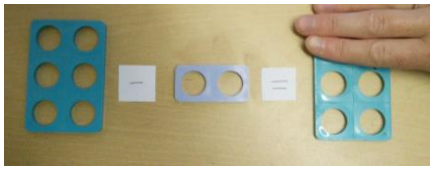
WAYS TO SUPPORT YOUR CHILD:

- Play board games with your child to rehearse counting on, eg. Snakes and Ladders.
- Expose your child to number tracks / lines to 10 and 20 to support their calculations.
- Counting on can also be encouraged through play with bead strings, pegs on a washing line, abacus etc.

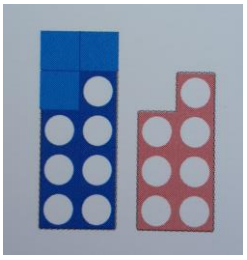
STAGE 3 (From Y1)

From Year 1, pupils begin to use Numicon more formally to subtract two numbers and 'find the difference'. By becoming more fluent in the use of Numicon, they become more able to calculate without counting.

Pupils initially subtract by 'take away', covering the holes in the Numicon with fingers and subtraction covers to find the remaining amount.



6 – 2 = 4

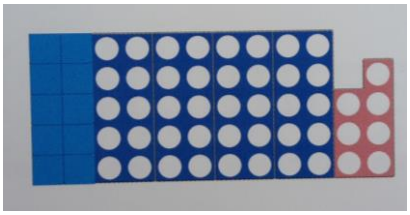


10 – 3 = 7

STAGE 3 (Continued)

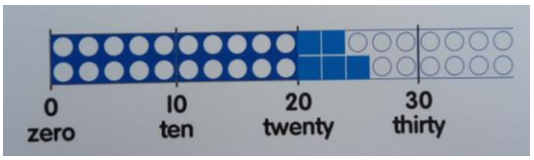
When confident with this, pupils will then begin to use the subtraction covers to 'take away' from larger numbers, first vertically, and later horizontally using the Numicon tens line.

From…



57 – 10 = 47

To…



25 – 5 = 20

Pupils will also learn to subtract by 'finding the difference', learning that there is a distinction between these approaches to subtraction. To do this, pupils will learn to put the smaller Numicon shape 'on top of' to see how many holes are left.

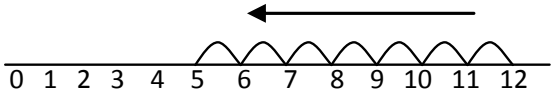
WAYS TO SUPPORT YOUR CHILD:

- Numicon resources are available to buy through school (please see Mrs Hodgkiss for further details).
- Free downloads of Numicon resources can be found through the Maths Zone at www.yardleyschool.com
- If you do have Numicon resources at home, encourage your child to make 2 digit numbers and see how many tens and units there are in each, and challenging your child to make a large number both vertically (as tens, then units), and horizontally.

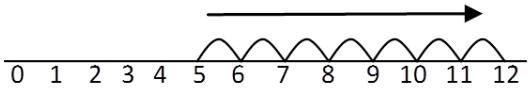
STAGE 4 (From Y1)

Alongside the Numicon image, pupils are encouraged to use prepared, and later their own, number lines as appropriate, to support their calculations. Children are taught to both 'count on' and 'count back'

12 – 7 (counting back)

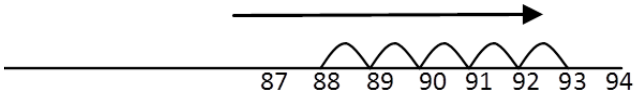


What is the difference between 5 and 12? (counting on)

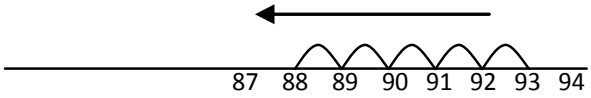


As children become secure in moving both forwards and back on a number line, they begin to understand when it is sensible either to count on or count back.

93 – 88 = 5 (counting on)



93 – 5 = 88 (counting back)



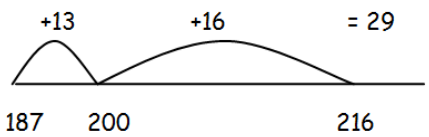
WAYS TO SUPPORT YOUR CHILD:

- Continue to recognise real life subtraction situations with your child, exploring both 'take away' (count back) problems, as well as 'find the difference' (count on) problems.
- Encourage your child to choose the appropriate subtraction strategy, if in doubt opt for the one which involves fewer jumps!
- Give your child access to both number lines and a hundred square to support their calculations.

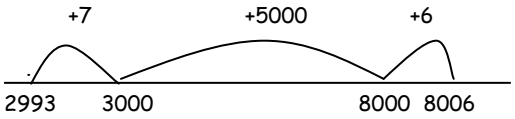
STAGE 5 (From Y3)

From Year 3, as children begin to work with larger numbers, they are encouraged to use counting on as their main strategy when subtracting using a number line. Children should use blank lines and choose their own jumps to move along the line, starting by counting on from the number being subtracted.

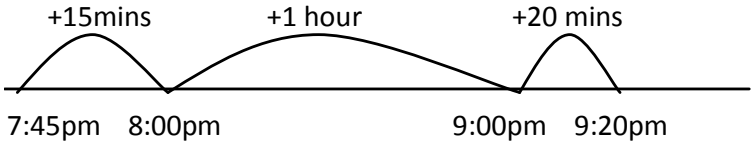
216 -187



8006 - 2993



How long does a programme last if it starts at 7.45pm and finishes at 9.20pm?



Number lines for calculating time

WAYS TO SUPPORT YOUR CHILD:

- Encourage your child to choose appropriate jumps to move along the number line.
- Remind your child to place the number being subtracted at the start of the number line and count on until they reach their target.

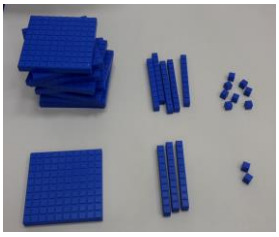
STAGE 5 (From Y3)

Children begin to develop more formal methods of subtraction through first the 'expanded method' and later the 'compact method'. In school this is supported through the use of Base Ten equipment.

Pupils first partition each number, recording them vertically, before subtracting each column. Once secure in this method, children move to a more compact form of recording. At this stage, children are not expected to 'borrow'.

```
 858   = 800  50  8
-132   -  100  30  2
          700  20  6   = 726
```

```
 8 5 8
-1 3 2
 7 2 6
```



WAYS TO SUPPORT YOUR CHILD:

- Reinforce the place value of each column as your child records and subtracts (hundreds, tens, units).
- Encourage your child to begin at the right, subtracting the least significant digits first eg. subtracting units, then tens, then hundreds and so on.
- Continue to explore place value by partitioning, with your child, as they encounter larger numbers, eg. For 375, what is the value of the 7? How many hundreds are there?

STAGE 6 (From Y3)

Children will begin to use column subtraction with different numbers of digits and decimals. When 'borrowing' children are encouraged to think about the place value of the digit, eg. borrow ten/hundred, not one.

- Column subtraction with no borrowing

```
  H T U
  8 5 8
- 1 3 2
  7 2 6
```

- Column subtraction with borrowing

```
  6 ~~7~~ 1 5 8
-   8 6
    6 7 2
```

```
    2 1   4 1
  ~~3~~6.~~5~~83
-   28.491
    08.092
```

WAYS TO SUPPORT YOUR CHILD:

- Reinforce place value as your child 'borrows', eg. borrow ten/one hundred (not one).
- Remind your child to write the new value at the top of the number from which they borrowed.
- Encourage your child to line up digits by place value and decimal point.
- Remind your child to start subtracting from least significant digit (right to left).