

**National Curriculum
For
Mathematics
2014**



Calculation Policy

Routes through Subtraction

Revised and amended September 2013

EARLY SKILLS - most children from foundation stage onwards.

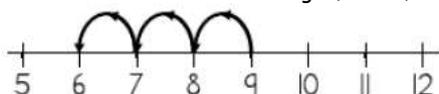
- **Story around structure** - I have a set of 6 objects to start with and so many of them get partitioned off, taken away, eaten, lost... 'How many are left?'
- Often modelled with sets of 'things' - essentially the story follows the same plot of 'have', 'take away', 'have left'
- Lots of songs and rhymes.
- Very practical.

Count out - a child finding $9 - 3$, gets 9 objects and takes away 3, counts how many remain.

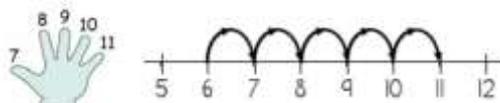


EARLY SKILLS - most children from Year One onwards.

Count back from - a child finding $9 - 3$, counts back three numbers from 9: 'eight, seven, six'.



Count up - a child doing $11 - 6$, counts up from 6 to 11, 'seven, eight, nine, ten, eleven', sometimes keeping a count of the spoken numbers using fingers.



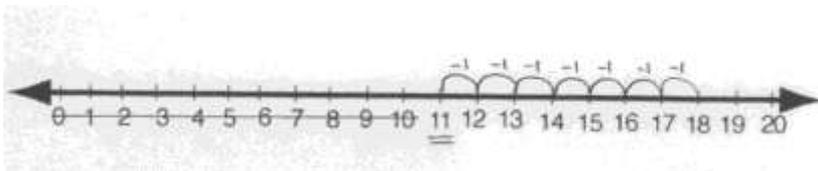
Using a hundred square - count back the tens and then the units (1s)

Using Tens and Units apparatus - take away the tens and then the units (1s) (ensure children are confident in exchanging a 10 rod for 10 units to enable them to cross the tens boundary)

EARLY NUMBER LINE - MOVING FROM MARKED TO EMPTY NUMBER LINES - most children from year 1 onwards

Counting back

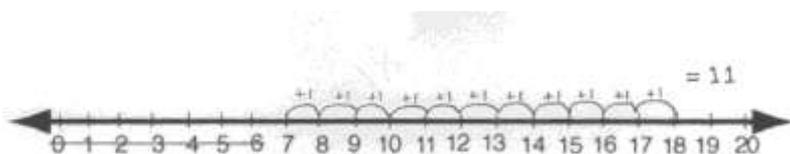
$18 - 7$



When using a marked number line it should still show 0. Children can then cross out the section from 0 to the smallest number. They then associate this method with 'taking away'. When appropriate children move to bridging through ten.

Counting on

$18 - 7$



Count up from 7 to 18 and total the number of steps.

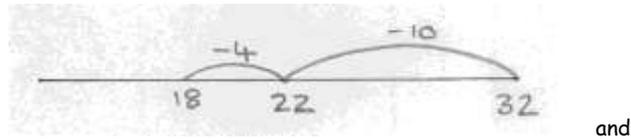
Gradually introduce counting on/back in 10s when children are ready and total the number of steps.

USING THE EMPTY NUMBER LINE - most children from year 2 onwards

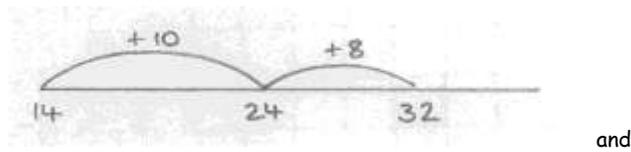
The empty number line

- The empty number line helps to record or explain the steps in mental calculation
- The empty number line is a useful way of modelling processes such as bridging through a multiple of ten. Children must be taught the skill of choosing the most appropriate method for the calculation.

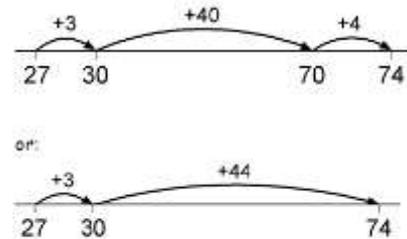
Counting back **32 - 14**



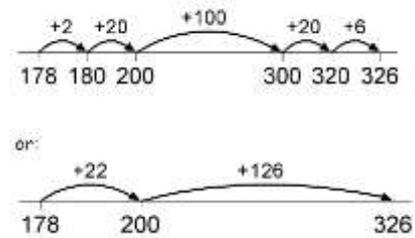
Counting on



The steps can also be recorded by counting up from the smaller to the larger number to **find the difference**, for example by counting up from 27 to 74 in steps totalling 47. Managing multiples of 10 is introduced



With three-digit numbers the number of steps can again be reduced, provided that children are able to work out answers to calculations such as $178 + ? = 200$ and $200 + ? = 326$ mentally.

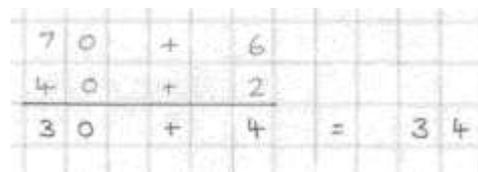


EXPANDED METHOD - Children from year 2/3 onwards

Partitioning the numbers into tens and units (1s) and writing one under the other mirrors the column method, where units are placed under units and tens under tens. Always begin with the units (1s) and then the tens so that children will be prepared for the column method.

This does not link directly to mental methods of counting back or up but parallels the partitioning method for addition. It also relies on secure mental skills.

76 - 42



<https://www.youtube.com/watch?v=7qtNfogyFyw>
Subtraction A

Now try these:

85 - 43

74 - 52

89 - 57

The expanded method leads children to the more compact method so that they understand its structure and efficiency. The amount of time that should be spent teaching and practising the expanded method will depend on how secure the children are in their recall of number facts and with partitioning.

$84 - 67$

<https://www.youtube.com/watch?v=I3JyOstFgyw>

Subtraction B

Now try your own:

$83 - 45$

$76 - 49$

$57 - 28$

COLUMN METHOD FOR THREE-DIGIT NUMBERS - FURTHER EXEMPLIFICATION - most children from Year 4

1. Begin with no adjustment or decomposition needed - initially compare to expanded method to illustrate similarity.

<https://www.youtube.com/watch?v=4kXqc7sqzN0>

Subtraction C

Now try these:

$739 - 525$

$869 - 417$

$744 - 223$

2. Adjust tens and progress to hundreds. Eventually leading to both adjustments at the same time.

<https://www.youtube.com/watch?v=idqXm3gk8sY>

Subtraction D

Now try these:

$739 - 573$

$869 - 482$

$744 - 469$

Extra: Dealing with zero:

<https://www.youtube.com/watch?v=06btnQA82a0>

Subtraction E

REFINING COLUMN METHOD, SUBTRACTING WHOLE NUMBERS BEYOND 1000 AND DECIMALS WITH ONE OR TWO PLACES.

Example: 2362 - 548

$$\begin{array}{r} 1 \ 2 \ 3 \ 6 \ 2 \\ \quad 5 \ 4 \ 8 \\ \hline 1 \ 8 \ 1 \ 4 \end{array}$$

<https://www.youtube.com/watch?v=MiYeiII9CCs>

Subtraction F

Example: 72.5 - 45.73

Children should be taught to use 0 as a place holder where necessary, as in this example.

$$\begin{array}{r} 6 \ 7 \ 1 \ 2 \ . \ 5 \ 0 \\ \quad 4 \ 5 \ . \ 7 \ 3 \\ \hline 2 \ 6 \ . \ 7 \ 7 \end{array}$$

Subtraction G

Thank you for using Berkswell's Route Through Calculation.

Please be aware that there are many very similar *and* different methods to these. You may have learnt slightly different methods to that which your children are learning within school. There may be differences between layout and presentation in these examples. The most important thing is that we encourage your children to learn a method which they are comfortable with and do not confuse them with too many contradictory strategies. The 'Route Through' is a way of making sure children understand what is happening in their maths. Skipping to the end without having been through the rest of the route may not harm you child in the short term, but could harm their chances of progressing further with maths in secondary school, due to a lack of understanding which is key to many of the more developed areas such as algebra. Thank you again for taking the time to view these examples and read through our route through calculation. It was created by a team of local schools and updated for the National Curriculum 2014.

Mr M. Penn