

## FOLTE Policy

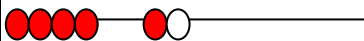
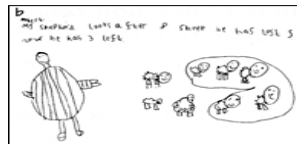
### Subtraction

#### Reception

Children use practical resources to support calculation and teachers *demonstrate* the use of these in a range of contexts (e.g. objects linked to topics i.e. compare bears, numicon, Cuisenaire, number line).

#### **Pictures and Objects**

Children are encouraged to develop a mental picture of the number system in their heads to use for calculation. They develop ways of recording calculations using pictures and jottings.



$$6-2=4$$

Find own way of recording for subtraction e.g. cross-outs or rubbing out.



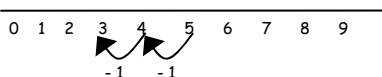
$$7-2=5$$

Solve practical problems in a real or role play context.

#### **Numberlines**

They use prepared numberlines and practical resources to support calculation. Teachers *demonstrate* the use of the numberline to count backwards using either **over** or **under** the numberline to complete subtraction questions. E.g.

$$5-2=3$$



## Year 1

Children use practical resources to support calculation and teachers *demonstrate* the use of these in a range of contexts (e.g. objects linked to topics i.e. compare toys, Numicon, Cuisenaire, number line).

### Pictures and Objects

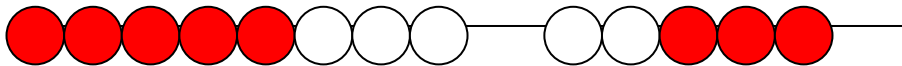
Children are encouraged to develop a mental picture of the number system in their heads to use for calculation. They develop ways of recording calculations using pictures etc. Using concrete objects and pictures to subtract.



### Bead strings and number square

Bead strings or bead bars can be used to illustrate subtraction including bridging through ten by counting back 3 then counting back 2 to 20, including zero.

$$13 - 5 = 8$$



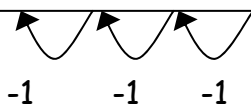
Children to begin to use a 100 square in Y1 to reinforce subtraction of numbers greater than 10 and identifying 1 less. Children to understand that subtraction must begin with the largest number and that it is the inverse of addition.

### Number lines

They use numberlines (including blank numberlines) and practical resources to support calculation counting in steps of one. Teachers *demonstrate* the use of the numberline. They use numberlines (including blank numberlines) and practical resources to support calculation counting in steps of one. Teachers *demonstrate* the use of the numberline.

$$6 - 3 = 3$$

0 1 2 3 4 5 6 7 8 9 10

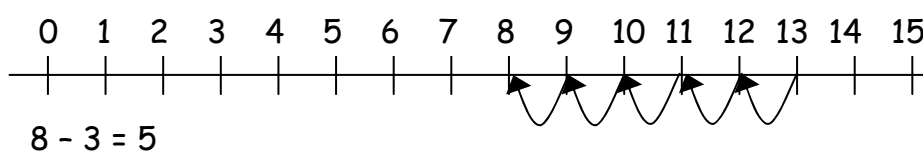


The numberline should also be used to show that 6 - 3 means the 'difference between 6 and 3' or 'the difference between 3 and 6' and how many jumps they are apart

0 1 2 3 4 5 6 7 8 9 10

Children then begin to use numbered lines to support their own calculations by using a numbered line to count back in ones using one and two digit numbers.

$$13 - 5 = 8$$



**Solve practical problems in a real or role play context.**

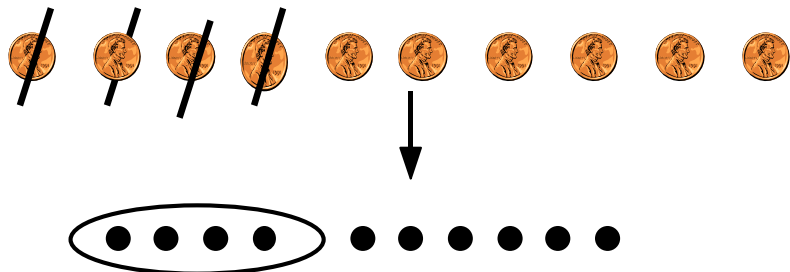
To continue to record simple subtraction in a number sentence using the - and = signs using one and two digit numbers to 20

e.g.

There were 8 cakes on a plate. Mary ate 3 of them. How many were left?

or

Sam spent 4p. What was his change from 10p?



To solve subtraction one step problem involving missing numbers such as  $7 = \square - 9$

## Year 2

Children use practical resources to support calculation and teachers *demonstrate* the use of these in a range of contexts (e.g. objects linked to topics i.e. Numicon, Cuisenaire, number line).

### Pictorial

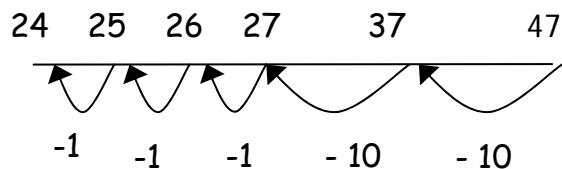
Children will continue to subtract numbers using concrete examples and pictorial representations and mentally, including a one digit number from a two digit number. Tens from a two digit number and a two digit number from a two digit number.

### Counting back

To continue to use empty number lines to support calculations.

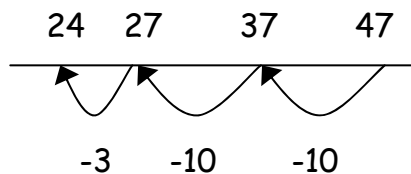
- ✓ First counting back in tens and ones.

$$47 - 23 = 24$$



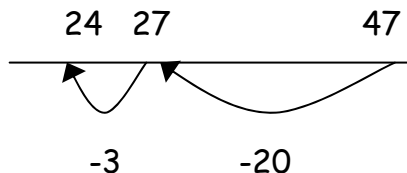
- ✓ Then helping children to become more efficient by subtracting the units in one jump (by using the known fact  $7 - 3 = 4$ ).

$$47 - 23 = 24$$



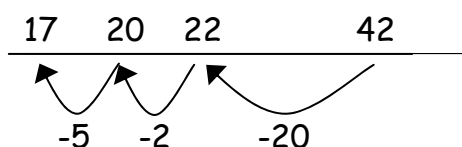
- ✓ Subtracting the tens in one jump and the units in one jump.

$$47 - 23 = 24$$



- ✓ Bridging through ten can help children become more efficient.

$$42 - 25 = 17$$



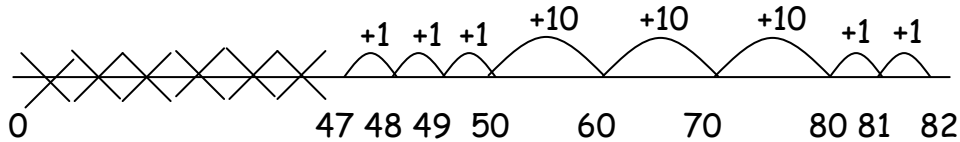
## Counting on

If the numbers involved in the calculation are close together or near to multiples of 10, 100 etc, it can be more efficient to count on.

Count up from 47 to 82 in jumps of 10 and jumps of 1.

The number line initially should still show 0 so children can cross out the section from 0 to the smallest number. They then associate this method with 'taking away'.

$$82 - 47$$



Help children to become more efficient with counting on by:

- ✓ Subtracting the units in one jump;
- ✓ Subtracting the tens in one jump and the units in one jump;
- ✓ Bridging through ten.

## Recording subtraction in columns

Children need to record subtraction in columns to support place value and formal written methods with larger numbers

$$\begin{array}{r} 89 \\ - 50 \\ \hline \end{array} = \begin{array}{r} 80 \\ 50 \\ \hline 30 \end{array} \begin{array}{r} 9 \\ 0 \\ \hline 9 \end{array} = 39$$

- Children need to recognise that subtraction is **not** a commutative operation
- Children recognise and use the inverter relationship between addition and subtraction to check calculations and solve missing number problems.

Once the children understand partitioning, children to use this method to subtract by keeping the first number whole and partitioning the second number.

e.g.  $152 - 47$

*becomes*

$$152 - 40 = 112$$

$$112 - 7 = 105$$

$$135 - 68$$

*Becomes*

$$135 - 60 = 75$$

$$75 - 8 = 67$$

### Missing numbers

Record mental subtraction in a number sentence using the - and = signs e.g.  $18 - 4 = 14$

Extend to

$$9 + 6 = 20 - \square \text{ etc}$$

Recognise the use of symbols such as  $\square$  or  $\nabla$  to stand for unknown numbers and complete number sentences.

$$13 - \Delta = 9 \quad \Delta - 4 = 9$$

$$\Delta - \diamond = 9 \text{ etc}$$

Extend to:

$$13 + 5 = \Delta - 10 \text{ etc}$$

### Problem solving

Children need to relate subtraction to numbers, quantities and measures.

### Year 3

Children use a range of structured apparatus to represent place value of numbers up to 20 e.g. numicon, diennes, coins, counters, multi-link

#### Number lines (where necessary)

Children may continue to use empty number lines with increasingly large numbers (up to 1000), without the need to always include 0.

#### Expanded method

$$\begin{array}{r} 89 \\ - 57 \\ \hline \end{array} = \begin{array}{r} 80 \\ - 50 \\ \hline 30 \end{array} \begin{array}{r} 9 \\ - 7 \\ \hline 2 \end{array} = 32$$

*Initially, the children will be taught using examples that do not need the children to exchange, after they are confident using practical equipment*

**From this the children will begin to exchange setting their work out using formal methods, subtracting numbers with up to 3 digits.**

e.g. 
$$\begin{array}{r} 71 \\ - 46 \\ \hline \end{array}$$

This could be recorded by the children as:

$$\begin{array}{r} 60 \quad 11 \\ - 40 \quad \underline{6} \\ 20 \quad 5 = 25 \end{array}$$

or

$$\begin{array}{r} \cancel{70}^{60} \quad 11 \\ - 40 \quad \underline{6} \\ 20 \quad 5 = 25 \end{array}$$

This should be used alongside structured apparatus

Where the numbers are involved in the calculation are close together or near to multiples of 10, 100 etc counting on using a number line should be used.

### Formal Written methods

Children then move onto subtracting numbers with up to 3 digits using the formal written methods of columnar subtraction where appropriate. e.g:

$\begin{array}{r} 874 \\ - 523 \\ \hline 351 \end{array}$ <p>Answer: 351</p>	$\begin{array}{r} \phantom{8} \phantom{12} \phantom{1} \\ 9 \phantom{3} \phantom{2} \\ - 4 \phantom{5} \phantom{7} \\ \hline 4 \phantom{7} \phantom{5} \end{array}$ <p>Answer: 475</p>	$\begin{array}{r} \phantom{1} \phantom{1} \\ 9 \phantom{3} \phantom{2} \\ - 4 \phantom{5} \phantom{7} \\ \hline 4 \phantom{7} \phantom{5} \end{array}$ <p>Answer: 475</p>
--	--	---

### Inverse

Estimate answers to calculations and use inverse to check answers

## Year 4

### Decomposition

Children use decomposition to set out in columns to solve subtraction calculations up to 4 digits. Including exchange.

e.g.  $5435 - 2542 = 2893$

$$\begin{array}{r} \phantom{4} \phantom{13} \\ 5 \phantom{4} \phantom{3} \phantom{5} \\ - 2 \phantom{5} \phantom{4} \phantom{2} \\ \hline 2 \phantom{8} \phantom{9} \phantom{3} \end{array}$$

Children should:

- ✓ be able to subtract numbers with different numbers of digits up to 4 digits involving money and measure e.g.

$\pounds 28.95$	leading to	$28.\overset{7}{8}5$
$\underline{-\pounds 24.38}$		$\underline{-24.38}$
$= \pounds 4.57$		$4.57$

- ✓ *children should know that decimal points should line up under each other.*
- ✓ *Alternatively, children can set the amounts to whole numbers, i.e.  $2895 - 2438$  and convert to pounds after the calculation.*



## Year 5 and 6

### Formal Written methods

Children to practise using the formal written methods of column subtraction with increasingly large numbers to aid fluency. See year 3 for method.

Example:

$$£345 - £67.97$$

Children should understand that a decimal point and zeros can be added to enable decomposition.

$$\begin{array}{r} 345 \\ - 67.97 \\ \hline \end{array} \text{ becomes } \begin{array}{r} 345.00 \\ - 67.97 \\ \hline \end{array}$$

Y5 e.g.  $3.276\text{kg} - 1.429\text{kg} =$

$$\begin{array}{r} \phantom{2} \phantom{1} \phantom{6} \phantom{1} \\ 3.276 \\ - 1.429 \\ \hline 1.847 \text{ kg} \end{array}$$

Year 6 e.g.  $23.59\text{litres} - 725\text{ml} =$

$$\begin{array}{r} \phantom{2} \phantom{1} \phantom{8} \phantom{1} \\ 23.590 \\ - 0.725 \\ \hline 22.865 \text{ litres} \end{array}$$

Or

$$\begin{array}{r} \phantom{2} \phantom{1} \phantom{8} \phantom{1} \\ 23590 \\ - 725 \\ \hline 22865\text{ml} \end{array}$$

### Solve problems

Children then solve two step problems explaining methods and reasoning orally and where appropriate in writing. Solve subtraction multi-step problems in contexts, deciding which operations and methods to use and why.

I have 5 litres of juice. I use 1355ml then a further 455ml. How much do I have left?