



# PROGRESSION IN SUBTRACTION



## EYFS

*What will subtraction look like?*

Teacher modelling, pictorial representation. Practical demonstrations of subtraction relating to 'take away' (e.g. 10 - 1?) Use of number tracks. Vocabulary of subtraction in practical activities. 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.



## Year 1

*What will subtraction look like?*

Number tracks leading to number lines introduced for recording 'jumps' back.

1	2	3	4	5	6	7	8	
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*Can you count back 5? Take away 5.*

Difference introduced practically and then on number tracks and lines, e.g. 12 - 7

*Can you make a rod 12 blocks long? My block is 7 blocks long. What's the difference?*

difference

0 1 2 3 4 5 6 7  $\longrightarrow$

0 1 2 3 4 5 6 7 8 9 10 11 12



Pupils use concrete apparatus to experience take away and difference in practical activities.

Count out 16 straws. If you give your friend 7, how many will you have left?

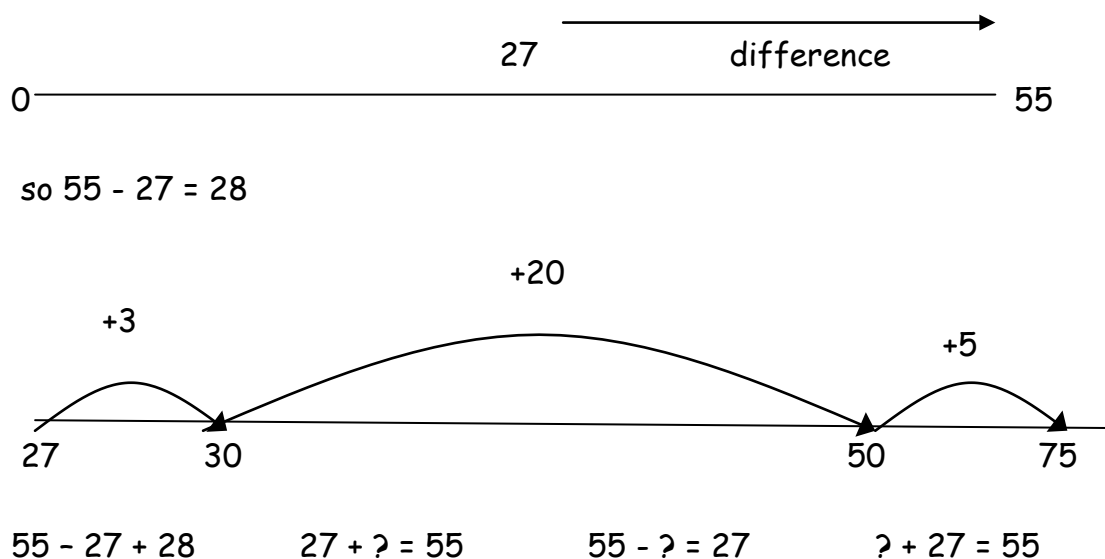
Guidance

- Pupils memorise and reason with number bonds to 10 and 20 in several forms (e.g.  $9 + 7 = 16$ ;  $16 - 7 = 9$ ;  $7 = 16 - 9$ ). They should realise the effect of adding or subtracting zero. This establishes addition and subtraction as related operations.
- Pupils combine and increase numbers, counting forwards and backwards.
- They discuss and solve problems in familiar practical contexts, including using quantities. Problems should include the terms put together, add, altogether, total, take away, distance between, more than and less than, so that pupils develop the concept of addition and subtraction and are enabled to use these operations flexibly.

Year 2

*What will subtraction look like?*

Pupils practice finding the difference by counting on using a number line. They are able to choose when to take away and when to find the difference when answering a subtraction problem.





## PROGRESSION IN SUBTRACTION



Pupils use concrete apparatus to explore exchange in practical activities (e.g. subtract 18p from 33p).



Pupils begin to organise their subtractions using expanded columnar methods

$$\begin{array}{r} 87 - 54 \\ \phantom{8}0 \phantom{7} \\ -\phantom{8}50 \phantom{7} \\ \hline \phantom{8}30 \phantom{7} \\ \phantom{8}3 \phantom{7} \end{array}$$

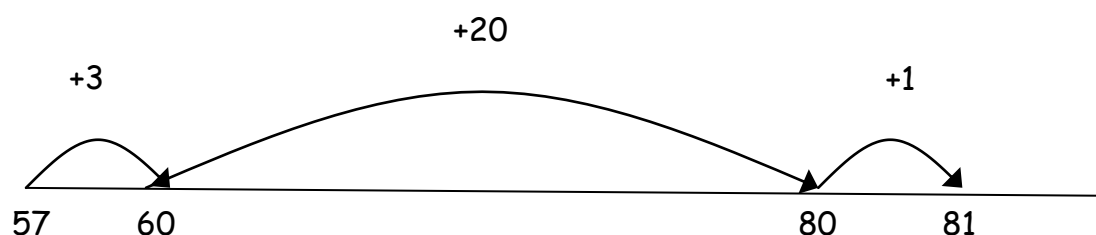
### Guidance

- Pupils extend their understanding of the language of addition and subtraction to include sum and difference.
- Pupils practise addition and subtraction to 20 to become increasingly fluent in deriving facts such as using  $3 + 7 = 10$ ,  $10 - 7 = 3$  and  $7 = 10 - 3$  to calculate  $30 + 70 = 100$ ,  $100 - 70 = 30$  and  $70 = 100 - 30$ . They check their calculations, including by adding to check subtraction and adding numbers in a different order to check addition (e.g.  $5 + 2 + 1 = 1 + 5 + 2 = 1 + 2 + 5$ ). This establishes commutativity and associativity of addition.
- Recording addition and subtraction in columns supports place value and prepares for formal written methods with larger numbers.

### Year 3

*What will subtraction look like?*

$$81 - 57 = 24 \text{ (difference)}$$





## PROGRESSION IN SUBTRACTION



81 - 57 = 24 (take away)

$$\begin{array}{r}
 81 = 80 \quad 1 \quad \text{"1 take away 7 is tricky} \\
 - 57 \quad - 50 \quad 7 \quad \text{so exchange"} \\
 \hline
 20 \quad 4 = 24
 \end{array}$$

and check answers with inverse.

Pupils progress to subtract numbers with up to 3 digits:

$$\begin{array}{r}
 341 - 123 \\
 \begin{array}{r}
 300 \quad 40 \quad 1 \\
 - 100 \quad 20 \quad 3 \\
 \hline
 200 \quad 10 \quad 8
 \end{array}
 \end{array}$$

or

$$\begin{array}{r}
 341 - 123 \\
 \begin{array}{r}
 300 \quad 40 \quad 1 \\
 - 100 \quad 20 \quad 3 \\
 \hline
 200 \quad 10 \quad 8
 \end{array}
 \end{array}$$

### Guidance

- Pupils practise solving varied addition and subtraction questions. For mental calculations with two-digit numbers, the answers could exceed 100.
- Pupils use their understanding of place value and partitioning, and practise using columnar addition and subtraction with increasingly large numbers up to three digits to become fluent.

## Year 4

### What will subtraction look like?

Pupils continue to calculate difference mentally using a number line.

Pupils progress to using the compact columnar method for subtraction.

$$\begin{array}{r}
 784 = 700 \quad 80 \quad 4 \quad \text{adjust from T to U} \\
 - 56 \quad - \quad 50 \quad 6 \\
 \hline
 700 \quad 20 \quad 8 = 728
 \end{array}$$



## PROGRESSION IN SUBTRACTION



Progressing to 4 digit numbers

$$\begin{array}{r}
 2754 \\
 -1562 \\
 \hline
 1192
 \end{array}
 =
 \begin{array}{r}
 2000 \\
 +1000 \\
 +500 \\
 +60 \\
 +2 \\
 \hline
 4192
 \end{array}$$

### Guidance

- Pupils continue to practise both mental methods and columnar spacing for addition and subtraction with increasingly large numbers to aid fluency.

## Year 5

*What will subtraction look like?*

Pupils continue to calculate difference mentally, supported with a number line.

Pupils use the column method to solve increasingly more complex calculations involving many exchanges, and solve subtractions with more than 4 digits:

$$\begin{array}{r}
 51316 \\
 6467 \\
 - 2684 \\
 \hline
 3783
 \end{array}$$

Pupils subtract decimals with more than one decimal place and with differing numbers of digits.

$$\begin{array}{r}
 01121 \\
 123.04 \\
 - 85.6 \\
 \hline
 37.44
 \end{array}$$

### Guidance



## PROGRESSION IN SUBTRACTION



- Pupils practise using the formal written methods of columnar addition and subtraction with increasingly large numbers to aid fluency.
- They practise mental calculations with increasingly large numbers to aid fluency.

### Year 6

*What will subtraction look like?*

Pupils continue to find the difference mentally using the number line with increasingly large numbers.

$$6467 - 2684 = 3783$$

$$\begin{array}{r} 5131 \\ 6467 \\ - 2684 \\ \hline 3783 \end{array} \quad \text{and check answer} \quad \begin{array}{r} 3783 \\ + 2684 \\ \hline 6467 \\ 11 \end{array}$$

$$\text{then } 324.9 - 7.2 = 317.25$$

$$\begin{array}{r} 1181 \\ 324.90 \\ - 7.25 \\ \hline 317.65 \end{array} \quad \text{and continue to use inverse to check}$$

### Guidance

- Pupils practise addition and subtraction for larger numbers, using the formal written methods of columnar addition and subtraction.
- They undertake mental calculations with increasingly large numbers and more complex calculations.

### Additional Notes

Children should not be made to go onto the next stage if:

- 1) they are not ready.
- 2) they are not confident.



## PROGRESSION IN SUBTRACTION



**Children should be encouraged to approximate their answers before calculating.**

**Children should be encouraged to check their answers after calculation using an appropriate strategy.**

**Children should be encouraged to consider if a mental calculation would be appropriate before using written methods.**