

## Stages in Subtraction

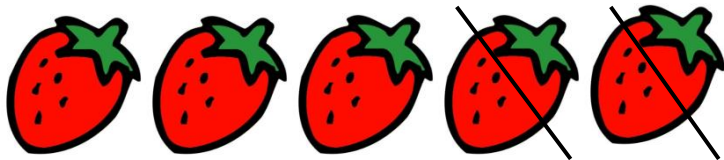
### Subtraction – Early Stages (EYFS)

Children will engage in a wide variety of songs and rhymes, games and practical activities. Through practical activities and discussion, they will begin to use the vocabulary associated with subtraction.

They will find one less than a given number.

They will begin to relate subtraction to ‘taking away’ using objects to count ‘how many are left’ after some have been taken away.

$$5 - 2 = 3$$



‘Take two strawberries away. How many strawberries are left?’  
Children will begin to count back from a given number.

### Subtraction - Year One

- Given a number, identify one less.
- Read, write and interpret mathematical statements involving subtraction (-) and equals (=) signs.
- Subtract one-digit and two-digit numbers within 20, including zero.
- Solve missing number problems. For example:

$$15 - \square = 10$$

Children will continue to practise counting back from a given number.

Initially use a number track to count back for subtraction:

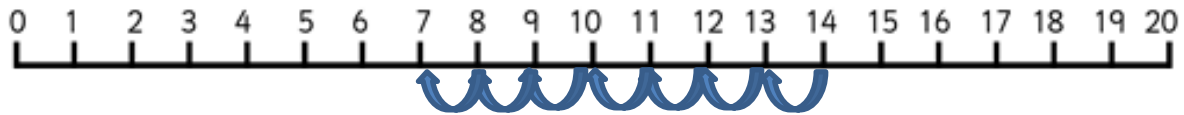


$$7 - 4 = 3$$

‘Put your finger on number seven. Count back four.’

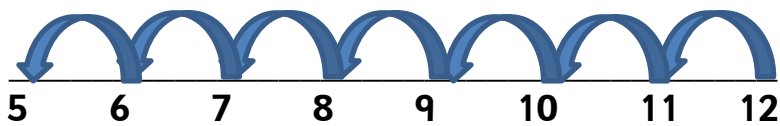
Then progress to a marked number line:

$$14 - 7 = 7$$



'Put your finger on number fourteen and count back seven.'

$$12 - 7 = 5$$



'Put your finger on number 12 and count back seven.'

Ensure children are confident with using a **marked number line** before moving on to an empty number line (see Year Two guidance).

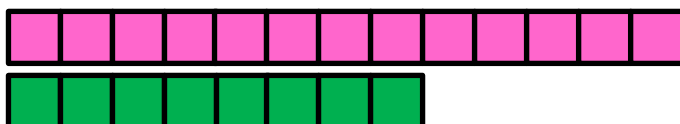
Continue to practise counting back for subtraction for numbers within 20.

### Counting on to find a small difference:

Introduce complementary addition to find differences (only use for **small** differences). The use of models is extremely important here to understand the idea of 'difference'.

Count up from the smallest number to the largest to find the difference using resources, for example: cubes, bead-strings, number tracks and number lines:

$$13 - 8 = 5$$



'The difference between eight and thirteen is five.'

**NB** If, at any time, children are making significant errors, return to the previous stage in calculation.

## Subtraction - Year Two

Ensure that children are confident with the methods outlined in the previous year's guidance before moving on.

- **Subtract numbers using concrete objects, pictorial representations, and mentally, including:**

- **A two-digit number and ones**
- **A two digit number and tens**
- **Two two-digit numbers**

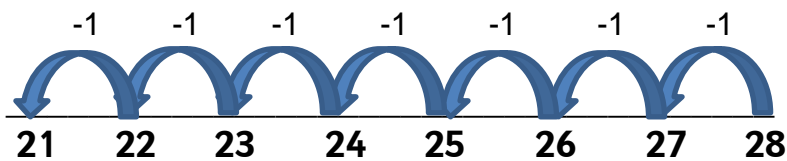
### **Statutory mental calculation expectations:**

add and subtract numbers using concrete objects, pictorial representations, and mentally, including:

- a two-digit number and ones
- a two-digit number and tens
- two two-digit numbers adding three one-digit numbers

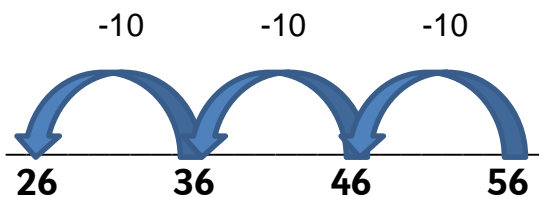
Counting back using an empty number line within 100, in ones...

$$28 - 7 = 21$$



...and in tens:

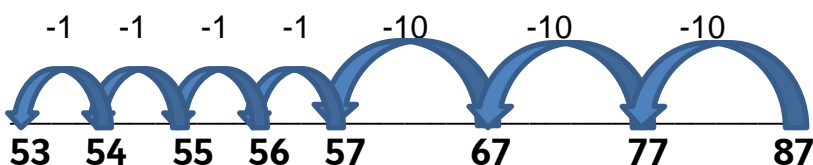
$$56 - 30 = 26$$



Use in conjunction with a 100-square to show jumps of ten.

Subtraction, using partitioning, on an empty number line:

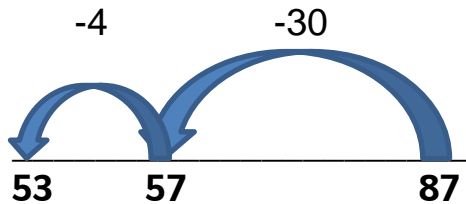
$$87 - 34 = 53$$



Use in conjunction with a 100-square to show jumps of tens and ones.

If children are confident, use more efficient jumps:

$$87 - 34 = 53$$



$$87 - 30 - 4 = 53$$

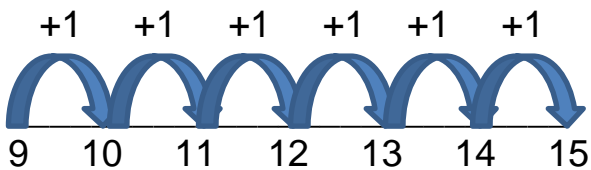
Use in conjunction with a 100-square to show jumps of tens and ones.

Counting on to find a small difference.

Introduce complementary addition to find differences (only use for small differences). In order for children to understand the idea of 'difference', it is extremely important that models are used (see Year 1 guidance).

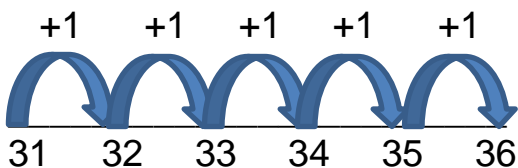
Count up from the smallest number to the largest to find the difference.

$$15 - 9 = 6$$



'The difference between 9 and 15 is 6.'

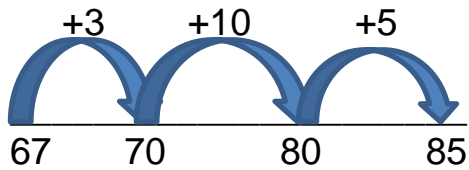
$$36 - 31 = 5$$



'The difference between 31 and 36 is 5.'

If children are confident, further develop this method:

$$85 - 67 = 18$$



'The difference between 67 and 85 is 18.'

Further develop subtraction with numbers that bridge 100, using a 200-grid to support.

**NB** If, at any time, children are making significant errors, return to the previous stage in calculation.

### Mathematical vocabulary for subtraction in Key Stage 1

-, subtract	take away	minus	leave	How many are left/left over?
one less	two less	ten less	hundred less	How many less is ... than ...?
How many fewer is...than...?	difference between	halve	half	How many are gone?
=, equals sign, is the same as	tens boundary	count back (from, to)	units, ones	tens

## Subtraction - Year Three

- Subtract numbers with up to three digits, using the formal written method of column subtraction

### Statutory mental calculation expectations:

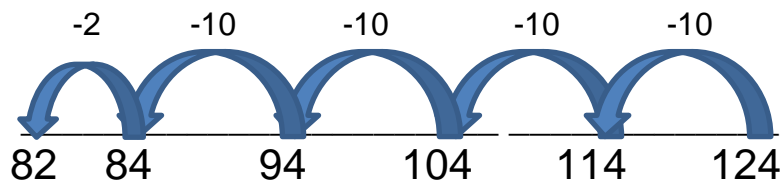
add and subtract numbers mentally, including:

- a three-digit number and ones
- a three-digit number and tens
- a three-digit number and hundreds

**NB** Ensure that children are confident with the methods outlined in the previous year's guidance before moving on.

Further develop the use of the empty number line with calculations that bridge 100:

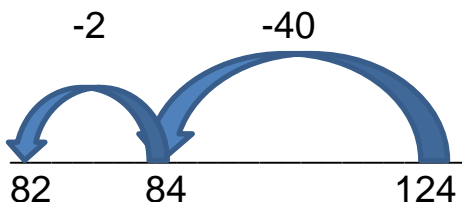
$$124 - 42 = 72$$



Use a 200-grid to support counting back in tens and bridging 100.

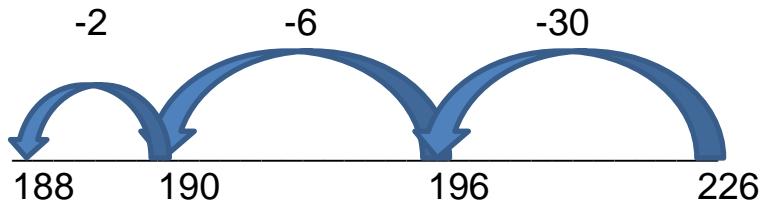
Then use more efficient jumps:

$$124 - 42 = 72$$



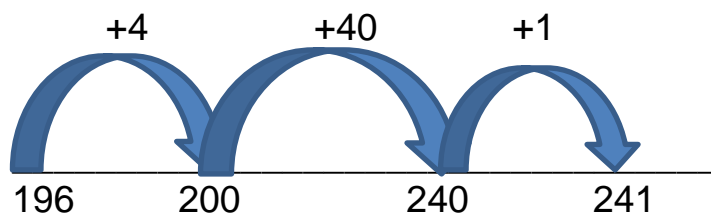
Extend with larger numbers by counting back...

$$226 - 38 = 188$$



...and by counting on to find the difference (a small difference):

$$241 - 196 = 45$$



'The difference between 196 and 241 is 45.'

Introduce the **expanded written method** with the calculation presented both horizontally and vertically (in columns). To begin with, use two-digit numbers when introducing this method:

$$88 - 34 = 54$$

$$\begin{array}{r} 80 \text{ and } 8 \\ -30 \text{ and } 4 \\ \hline 50 \text{ and } 4 = 54 \end{array}$$

'Partition both numbers into tens and units (ones). Subtract the units; then subtract the tens. Recombine to give the answer.'  
**\*\*It is not necessary for the children to write the word 'and' in their books. It is purely for your demonstration\*\***

We then move on to the **formal written method**:

$$\begin{array}{r} 88 \\ -34 \\ \hline 54 \end{array}$$

Use the language of place value to ensure understanding: 'Eight **subtract** four.' 'Eighty subtract thirty.'

**NB** When introducing the formal written method for subtraction, two-digit numbers should be used, without the need for decomposition (exchange).

Next, introduce the expanded written method where decomposition (exchange) is required:

$$84 - 16 = 68$$

$$\begin{array}{r} 80 \text{ and } 4 \\ -10 \text{ and } 6 \\ \hline \end{array} \quad \text{becomes} \quad \begin{array}{r} 70 \text{ and } 14 \\ -10 \text{ and } 6 \\ \hline 60 \text{ and } 8 = 68 \end{array}$$

84 is partitioned into 70 and 14 in order to calculate  $84 - 16$ .

**NB** children will need to practise partitioning numbers in this way. Pupils need concrete resources to support this.

**When children are confident** with the expanded method introduce the **formal written method**, involving decomposition (exchange):

$$\begin{array}{r} \phantom{7}8\phantom{1}4 \\ - \phantom{7}1\phantom{1}6 \\ \hline \phantom{7}6\phantom{1}8 \end{array}$$

Use the language of place value to ensure understanding. 'We cannot subtract six from four, so we must exchange a ten for ten units to give us  $14 - 6$ .'

**NB** Pupils need concrete resources to support this.

If children are confident, extend the use of the formal written method with numbers over 100, **returning to the expanded method first, if necessary**.

$$\begin{array}{r} \phantom{2}3\phantom{13}3 \\ - \phantom{2}1\phantom{13}5\phantom{1}5 \\ \hline \phantom{2}1\phantom{13}8\phantom{1}8 \end{array}$$

$$343 - 155 = 188$$

Use the language of place value to ensure understanding. In this example, it has been necessary to exchange from the tens and hundreds columns.

**NB** If, at any time, children are making significant errors, return to the previous stage in calculation.



## Subtraction - Year Four

- Subtract numbers with up to four digits, using the formal written method of column subtraction, where appropriate.

**NB** Ensure that children are confident with the methods outlined in the previous year's guidance **before moving on**.

Continue to teach the use of empty number lines with three and four-digit numbers, as appropriate.

Continue to develop the formal written method of subtraction by revisiting the expanded written method first, **if necessary**.

$$268 - 83 = 185$$

$$\begin{array}{r} 200 \text{ and } 60 \text{ and } 8 \\ - \quad \quad 80 \text{ and } 3 \\ \hline \end{array}$$

becomes

$$\begin{array}{r} 100 \text{ and } 160 \text{ and } 8 \\ - \quad \quad 80 \text{ and } 3 \\ \hline 100 \text{ and } 80 \text{ and } 5 \end{array}$$

Then, move on to the **formal written method**, involving decomposition:

$$\begin{array}{r} \overset{1}{\cancel{2}} \overset{1}{6} 8 \\ - \quad 83 \\ \hline 185 \end{array}$$

Use the language of place value to ensure understanding. In this example, it has been necessary to exchange from the hundreds column.

Further develop by subtracting a three-digit number from a three-digit number:

$$638 - 256 = 382$$

Ensure that children are confident in partitioning numbers in this way.

$$\begin{array}{r} 600 \text{ and } 30 \text{ and } 8 \\ - 200 \text{ and } 50 \text{ and } 6 \\ \hline \end{array}$$

becomes

$$\begin{array}{r} 500 \text{ and } 130 \text{ and } 8 \\ - 200 \text{ and } 50 \text{ and } 6 \\ \hline 300 \text{ and } 80 \text{ and } 2 = 382 \end{array}$$

This leads on to the formal written method

$$\begin{array}{r}
 \begin{array}{c} 5 \\ \cancel{6} \end{array} \begin{array}{c} 1 \\ 3 \end{array} 8 \\
 - 256 \\
 \hline
 382
 \end{array}$$

Use the language of place value to ensure understanding.

When children are confident, develop with **four-digit numbers** and decimal numbers (in the context of money and measures).

$$3857 - 1673 = 2184$$

$$\begin{array}{r}
 \begin{array}{c} 7 \\ \cancel{8} \end{array} \begin{array}{c} 1 \\ 5 \end{array} 7 \\
 - 1673 \\
 \hline
 2184
 \end{array}$$

**NB** If, at any time, children are making significant errors, return to the previous stage in calculation.

### Subtraction - Year Five

- Subtract whole numbers with more than 4 digits, including using the formal written method (column subtraction).

**Statutory mental calculation expectations:**  
add and subtract numbers mentally with increasingly large number.

**NB** Ensure that children are confident with the methods outlined in the previous year's guidance before moving on.

Continue to teach the use of empty number lines with larger numbers and decimals, as appropriate.

Continue to develop the **formal written method for subtraction** with three and four-digit numbers (see Year 4 guidance), returning to an expanded method if necessary.

$$805 - 247 = 558$$

$$\begin{array}{r} 800 \text{ and } 00 \text{ and } 5 \\ -200 \text{ and } 40 \text{ and } 7 \end{array} \qquad \begin{array}{r} 700 \text{ and } 90 \text{ and } 15 \\ -200 \text{ and } 40 \text{ and } 7 \end{array}$$

In this example, 805 is partitioned into 700 and 90 and 15 to carry out the subtraction calculation.

This leads into the **formal written method**:

$$\begin{array}{r} \overset{7}{\cancel{8}} \overset{9}{\cancel{0}} \overset{1}{\cancel{5}} \\ - \quad \underline{247} \\ \hline 558 \end{array}$$

Use the language of place value to ensure understanding.

'We cannot subtract seven from five, so we must exchange a ten for ten units. However, there are no tens to exchange, so we must exchange a hundred for ten tens first, making **700** and **100** and **5**. Now we can exchange one ten for ten units, making **700** and **90** and **15**. Next calculate **15** subtract **7**; **90** subtract **40**, and **700** subtract **200**.'

**NB** It would be appropriate to discuss the use of mental calculation methods. For example: 'Would an empty number line be a more efficient method to calculate the answer to a calculation with these numbers?'

When children are confident, extend with larger numbers (and decimal numbers). If necessary, return to an expanded method.

$$14653 - 1745 = 12908$$

$$\begin{array}{r} \overset{3}{\cancel{1}} \overset{1}{\cancel{4}} \overset{4}{\cancel{6}} \overset{1}{\cancel{5}} \overset{1}{\cancel{3}} \\ - \quad \underline{1745} \\ \hline 12908 \end{array}$$

**NB** If children are making significant errors, provide calculations where only one exchange is required.

Introduce subtraction of decimals. This should begin in the context of money and measures.

$$£178.75 - £92.56 = £86.19$$

	1	7	8	.	7	5
-		9	2	.	5	6
<hr/>						
		8	6	.	1	9

Ensure that, when recording the calculation, the decimal points line up.

\*Please also use numbers with a different number of decimal places, to ensure the children understand the importance of lining up the decimal point and use zero as the place value holder.

Continue to practise and apply the formal written method with large numbers and decimals throughout Year 5.

**NB** If, at any time, children are making significant errors, return to the previous stage in calculation.

## Subtraction – Year 6

No objectives have been included in the Programmes of Study that are explicitly related to written methods for subtraction in Year 6. However, there is an expectation that children will continue to practise and use the **formal written method for larger numbers and decimals**, and use these methods when solving problems, when appropriate.

Our aim is that by the end of Year 6, children will use mental methods when appropriate (with jottings, if it is fitting to do so). However, for calculations that cannot be worked out 'in their heads', children must use an efficient formal written method **accurately** and **confidently**.

## Mathematical vocabulary for subtraction Key Stage 2

units	ones	tens	hundreds	thousands
ten thousand	hundred thousand	million	digit	one-, two-, three- or four-digit number
place, place value	stands for, represents	exchange	the same number as, as many as	equal to
decimal	decimal fraction	decimal point	decimal place	subtract, subtraction
take (away), minus, decrease	leave	How many are left/left over?	difference between	How many fewer is... than...?
How much less is...?	is the same as, equals,	tens boundary	hundreds boundary	