



# Subtraction

Subtraction can be described in three ways:

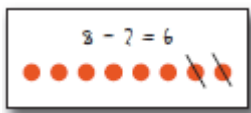
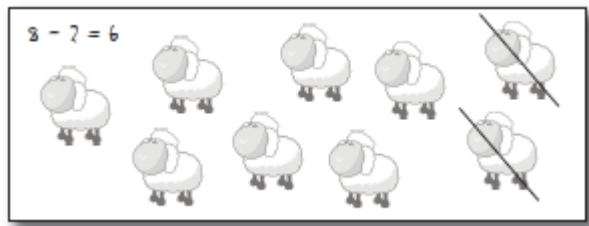
- taking away
- counting back
- finding the **difference** (counting on)

It is important that children understand the relationship between these three different interpretations of subtraction.

## TAKING AWAY

**Stage 1** (Foundation Stage - Year 1)

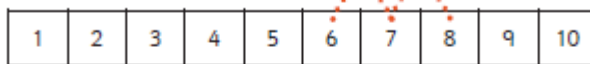
Real objects, pictures and symbols come first.



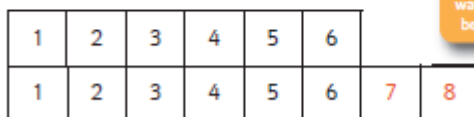
## COUNTING BACK

Using numberlines to count back in ones

Use a number track to count back:



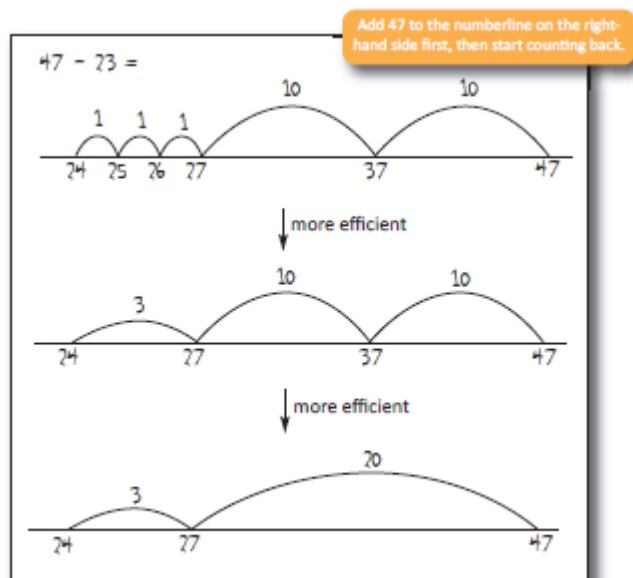
Or find the difference by comparing two number tracks:



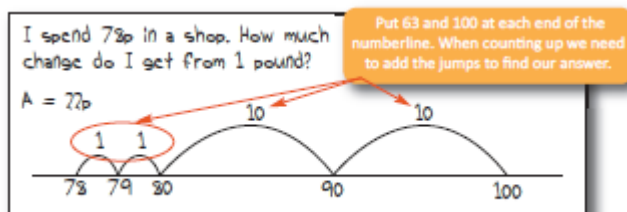
Note: Counting on with a numberline works too, but this way you can see a difference between the two numbers.

## **Stage 2**

Using an empty numberline we count backwards from the right. As with addition, the challenge is choosing efficient jumps backwards.

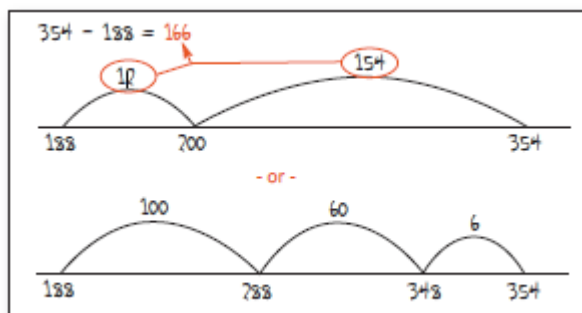


If the numbers involved in the calculation are close together or close to multiples of 10 or 100 etc, it can be easier to count on. In fact many children find counting on more straightforward. A common example is counting on to find change.



### Stage 3 (around Year 3)

At this stage, children are using numberlines with much greater skill; they choose the best methods and the best jumps for subtraction calculations less than 1000.



Pencil and paper methods without using a numberline begin with a simple, expanded method which makes explicit the need to move tens into the units column to carry out a subtraction like  $63 - 37$ . As with addition, we must **start at the right** with the **least significant digits**.

$$63 - 37 =$$

$$\begin{array}{r} 60 + 3 \\ - 30 + 7 \\ \hline \end{array}$$

$$63 - 37 = 26$$

$$\begin{array}{r} 50 + 13 \\ - 30 + 7 \\ \hline 20 + 6 \end{array}$$

Set out the calculation as shown here on the left, partitioning the tens and units. In order to "take 7 from 3" we need to move ten to the units column. At this point a common mistake is to reverse the calculation and take 3 from 7; remember that we are taking 37 from 63.

$$63 - 37 =$$

$$\begin{array}{r} 50 + 13 \\ - 30 + 7 \\ \hline 6 \end{array}$$

Once we have moved 10 we can take 7 from 13, leaving 6. Then we take 30 from the new value of 50.

#### Stage 4 (Year 4 - Year 6)

This is the final stage for subtraction. We contract our expanded written method into the standard method: **decomposition**. Again, start on the right.

$$754 - 286 =$$

$$E = 750 - 300 = 450$$

$$\begin{array}{r} 754 \\ - 286 \\ \hline \end{array}$$

$$754 - 286 =$$

$$E = 750 - 300 = 450$$

$$\begin{array}{r} 744 \\ - 286 \\ \hline 68 \end{array}$$

$$754 - 286 =$$

$$E = 750 - 300 = 450$$

$$\begin{array}{r} 644 \\ - 286 \\ \hline 68 \end{array}$$

In this calculation, first move a ten into the units column. A common mistake is to reverse the calculation, taking 4 from 6. Repeat, moving a hundred into the tens column.

This method is highly error prone. It is essential that children check their answer against their estimate.

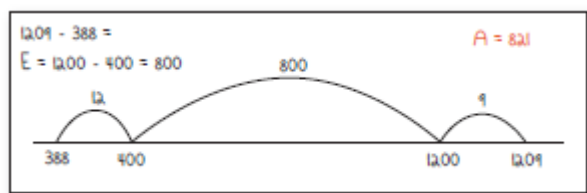
$$754 - 286 =$$

$$E = 750 - 300 = 450$$

$$\begin{array}{r} 644 \\ - 286 \\ \hline 468 \end{array}$$

A = 468

Numberlines remain easier and more reliable in some cases and children by now should be confident with this process.



As with addition, children should be able to calculate with:

- decimal fractions with different numbers of digits
- different units, eg 5.67kg - 870g