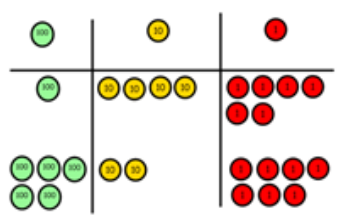# Great Linford Primary School

Subtraction

A handy pocket guide explaining the different stages of learning your child will go through as they learn about Subtraction in our school.

Concrete > Pictorial > Abstract

Concrete
We begin all of our maths learning journeys with the use of concrete apparatus. This might include counters, cubes, base 10, beadstrings, numicon, weights, measuring jugs etc. Using concrete apparatus helps children to visualise the numbers and understand their relative size.

Pictorial
We then use models/images to show children a pictorial version of the apparatus they have used. We might use symbols, or draw counters instead of handing them out on tables.

Abstract
Finally, children are confident enough to just use the abstract style of recording that mathematicians use, made up of numbers and symbols.

Stage 1 - taking away and counting back

Counting back from a number and taking something away
Skills needed:

- Counting back in ones.
- Knowing number bonds, halves and spotting patterns.
- Understanding what subtraction is and how it is inverse to addition.
- Knowing that subtraction is not commutative (3-2 is not the same as 2 - 3)
- Knowing how to represent numbers with resources and pictures.
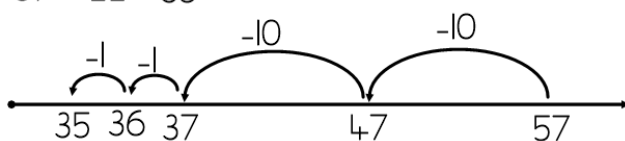- Understanding the place value of numbers.

13 - 4
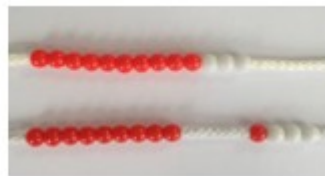
Children use cubes, numicon or counters to make the 'whole'. We learn that when we subtract, we start with the whole. Children then start by physically taking away amounts either in ones or in groups. When they draw images to show this, they will cross out as they 'take away'.

Tens   Ones

9 10 11 12 13 14 15

57 - 22 = 35

-1 -1   -10   -10

35 36 37   47   57
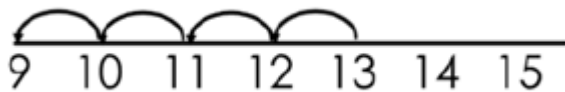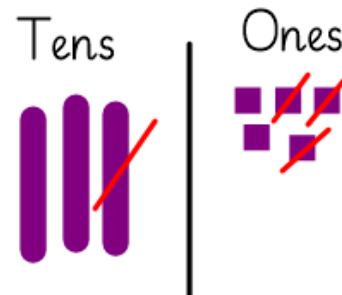
We use beadstrings and then numberlines to count back from a number. This starts with counting back in 1s, but moves onto counting back in tens or larger groups of numbers at a time.

Stage 2 - finding the difference and counting on
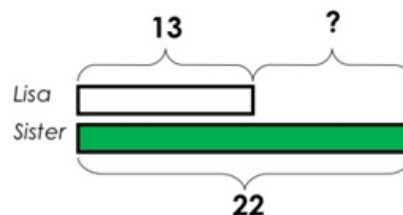
Knowing when to count on or find the difference

Skills needed:

- Understanding the place value of numbers
- Multiples of 10 and counting in tens.
- Understanding that addition and subtraction are inverse operations.
- Understanding that subtraction is finding the difference.
- Understanding that when we subtract, we start with the whole (Knowing which number we are 'taking away').
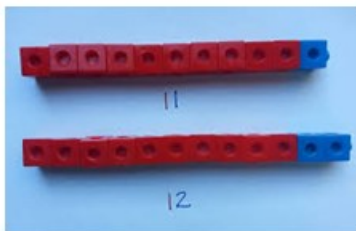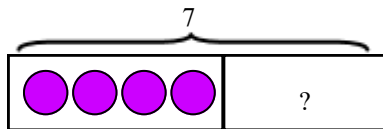
We make comparison bars to show that when we subtract, we are finding the difference between two amounts.

Lisa is 13 years old. Her sister is 22 years old. Find the difference in age between them.

We learn how to use bar models and part whole models to find the 'missing part'. This helps us to understand the link between addition and subtraction. We do this at first with counters and then draw our own.
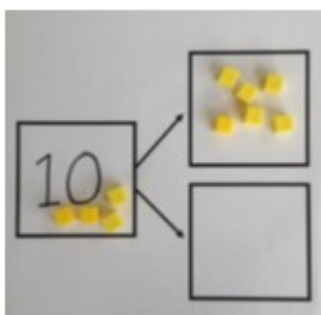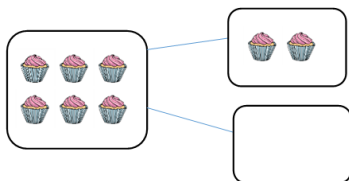
When solving calculations in our heads, we learn that sometimes it is quicker to 'take away' e.g. 356 - 8 when the amount we are taking away is a small amount. For other calculations, it is quicker to 'count on' e.g. 356 - 339 when the difference is a small amount.

Stage 3 - Column method

<u>Understanding how to record using formal methods</u>
<u>Skills needed:</u>

- Understanding the place value of numbers and how to record these in columns.
- Multiples of 10 and counting in tens.
- Partitioning numbers
- Knowing how to regroup numbers (exchange ten for 'ten ones').
- Knowing when to use a written method and when to calculate mentally or on a numberline.

95 - 48
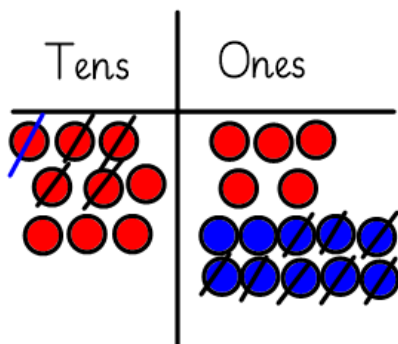
At first, children practise exchanging' by taking away counters on a place value grid, and swapping ten for 'ten ones' when they run out of counters to subtract in a column.

Some children will also choose to use base ten cubes, counters, place value grids or beadstrings alongside this method to support them. Other children prefer to draw base 10 or counters and then cross them out to show 'taking away'. We continue to use numberlines for some calculations using larger numbers that have a small difference or can be solved by counting back.

We then learn how to record formally. At first we just learn to record in columns with no 'exchanging'. Then we learn how to exchange. We neatly cross out numbers we need to exchange, and write the new digit amount above the column.

<u>Year Group Expectations</u>
EYFS - numbers up to 20.
Years 1/2 - numbers up to 100.
Years 3/4 - three and four digit numbers.
Years 5 and 6 - 7 digit numbers and decimals