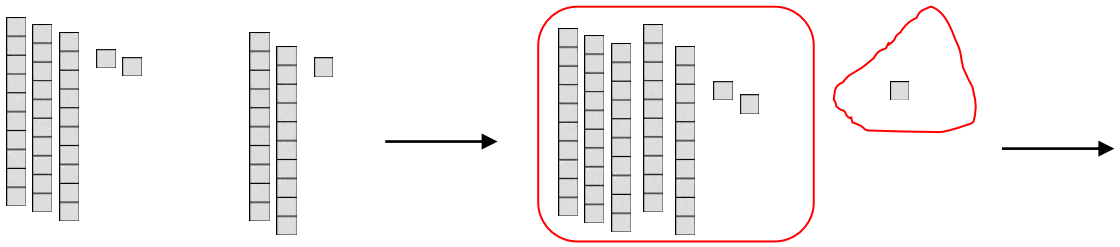
Which method will my child be using?

Addition

Year 2

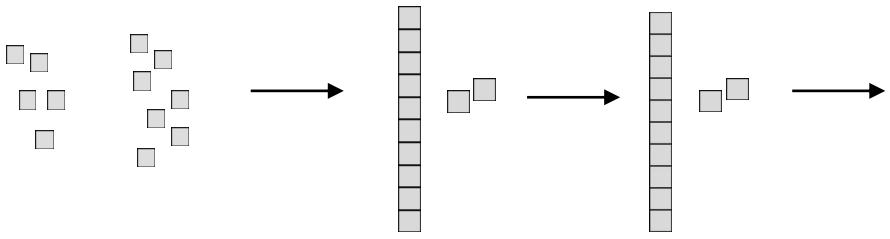
Number lines and **practical resources** will continue to help to support addition calculations. Children will use base 10 equipment to build on their strategies for adding tens and ones.
eg 32 + 21



32 + 20 = 52
52 + 1 = 53
32 + 21 = 53

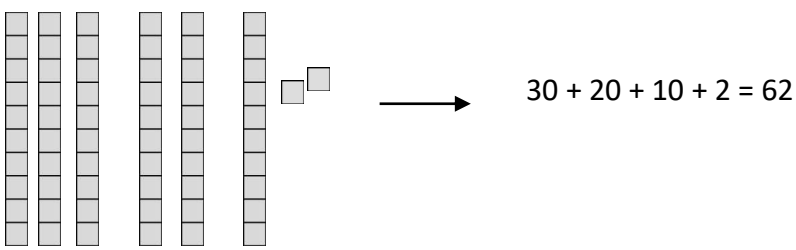
When the ones total more than 10, children will be encouraged to exchange 10 ones for 1 ten. This is the start of children understanding 'carrying' in vertical addition. For example, when calculating 35 + 27, they can represent the amounts using Base 10 as shown:

Then, identifying the fact that there are enough ones to exchange for a ten, they can carry out this exchange:



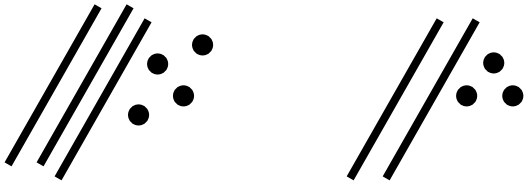
5 + 7 = 12
12 = 10 + 2

To leave:

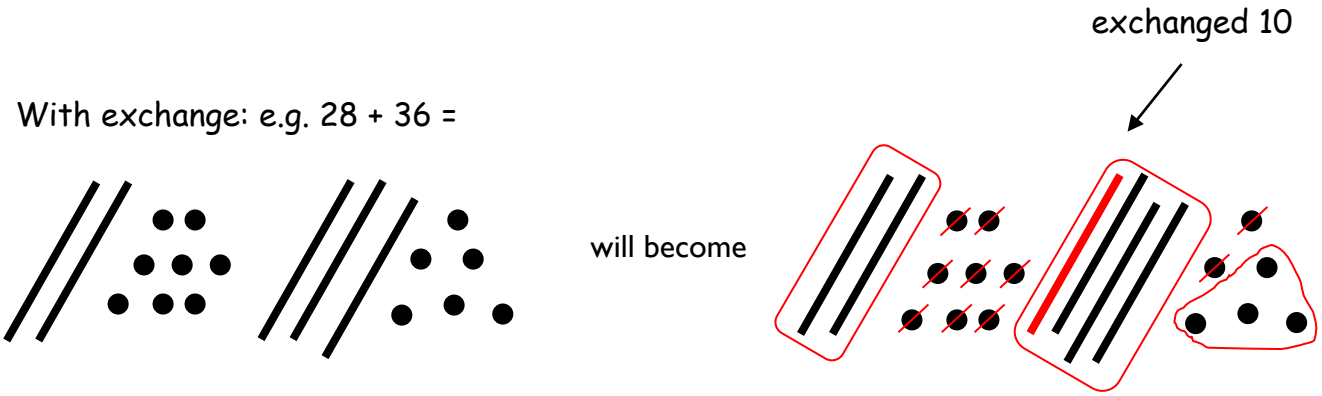


30 + 20 + 10 + 2 = 62

Children can also record the calculations using their own drawings of the Base 10 equipment (as slanted lines for the 10 rods and dots for the unit blocks) e.g. 34 + 23 =



With exchange: e.g. 28 + 36 =

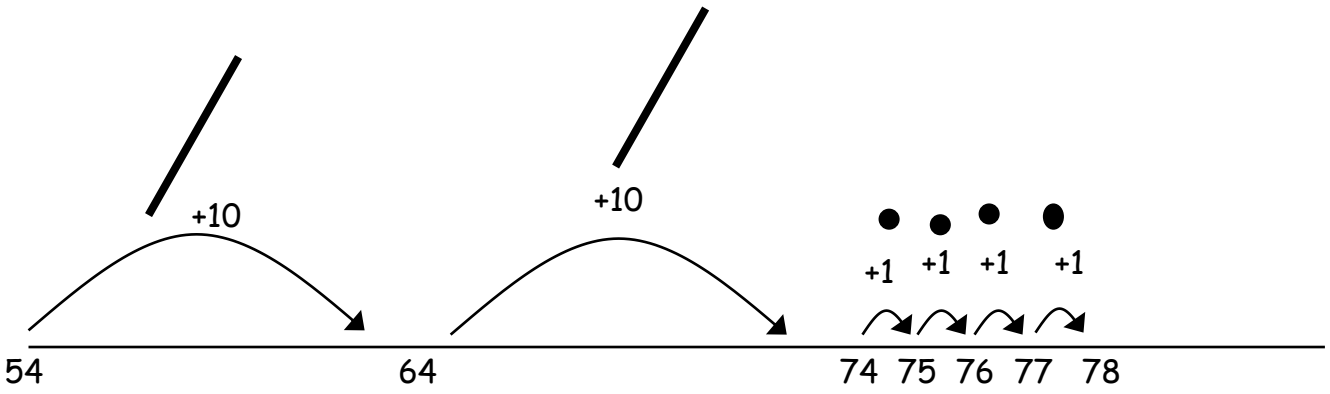


so 28 + 36 = 64

It is important that children circle the remaining tens and ones after exchange to identify the amount remaining.

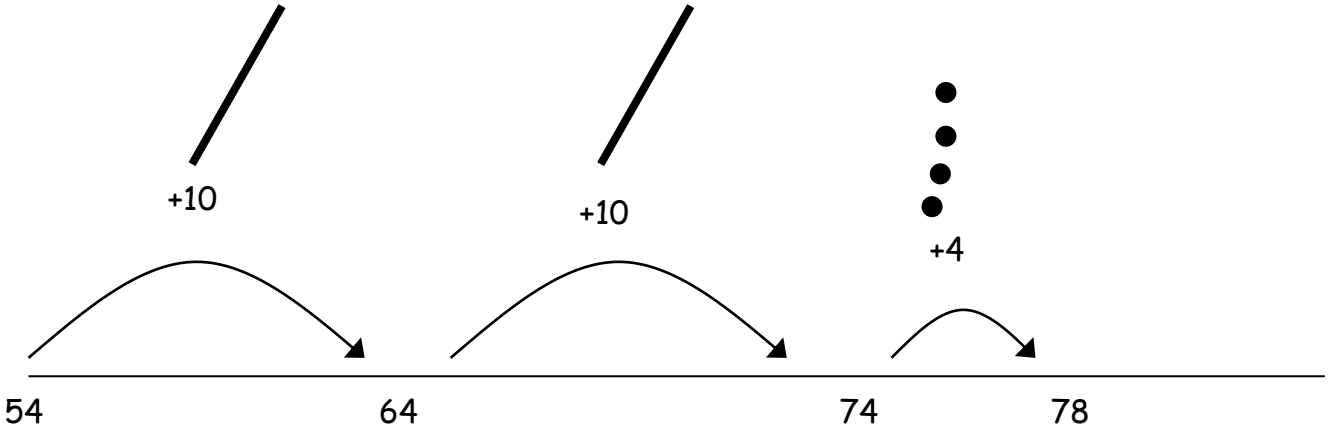
<u>When using the number line to support mental methods for addition</u>

First counting on in tens and ones. 54 + 24 = 78

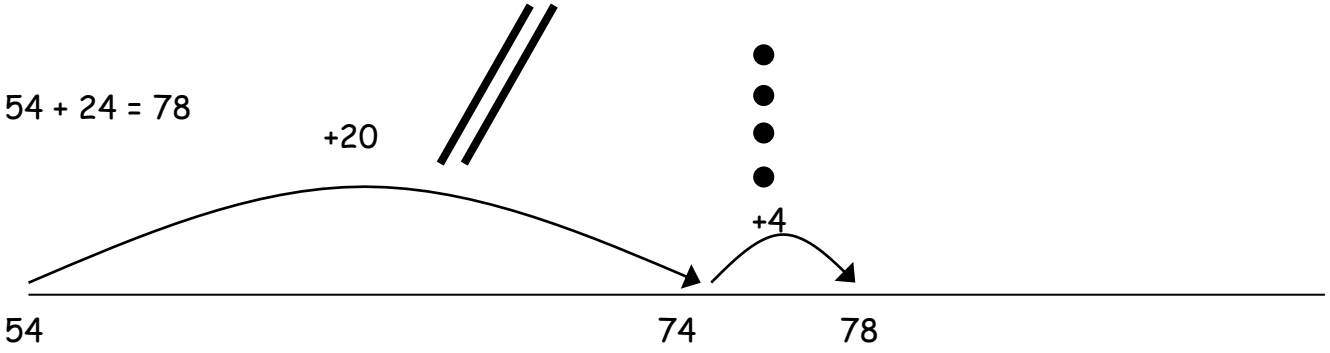


Then helping children to become more efficient by adding the ones in one jump (by using the known fact 4 + 4= 8).

54 + 24 = 78

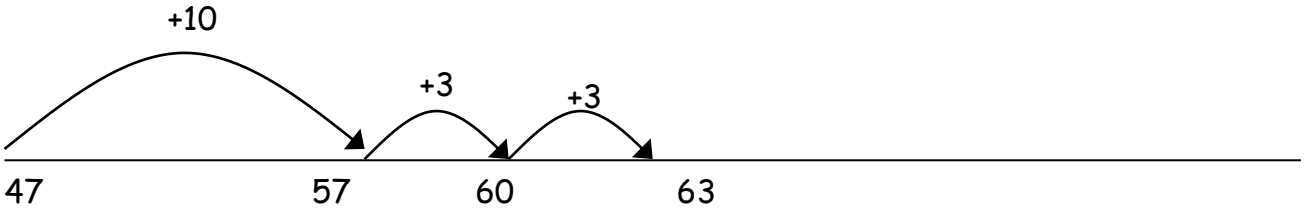


Followed by adding the tens in one jump and the ones in one jump.



Bridging through ten can help children become more efficient.

47 + 16 = 63

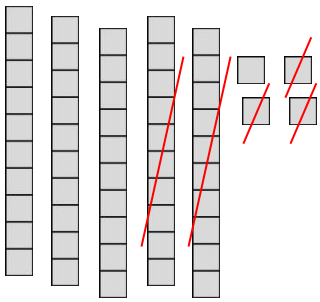


Which method will my child be using?

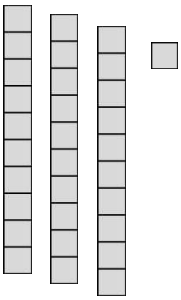
Subtraction

Year 2

Children will begin to use the **Base 10 equipment** to support their calculations, still using a take away, or removal, method. They need to understand that the number being subtracted does not appear as an amount on its own, but rather as part of the larger amount. For example, to calculate 54 - 23, children would count out 54 using the Base 10 equipment (5 tens and 4 ones). They need to consider whether there are enough ones to remove 3, in this case there are, so they would remove 3 ones and then two tens, counting up the answer of 3 tens and 1 unit to give 31.

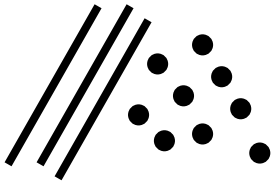


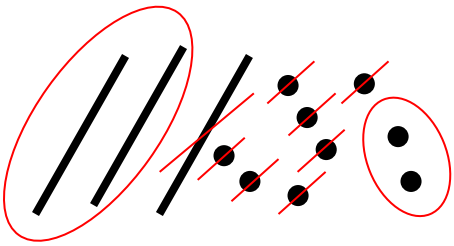
which leaves



so 54 – 23 = 31

Children can also record the calculations using their own **drawings of the Base 10 equipment** (as slanted lines for the 10 rods and dots for the unit blocks), e.g. to calculate 39 – 17 children would draw 39 as 3 tens (lines) and 4 ones (dots) and would cross out 7 ones and then one ten, counting up the answer of 2 tens and 2 ones to give 22.

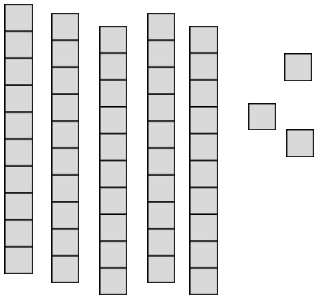




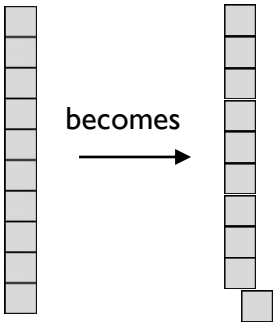
Circling the tens and ones that remain will help children to identify how many remain.

When the amount of ones to be subtracted is greater than the ones in the original number, an **exchange** method is required. This relies on children's understanding of ten ones being an equivalent amount to one ten. To calculate 53 – 26, by using practical equipment, they would count out 53 using the tens and ones, as in Step 1. They need to consider whether there are enough ones/ones to remove 6. In this case there are not so they need to exchange a ten into ten ones to make sure that there are enough, as in step 2.

Step 1

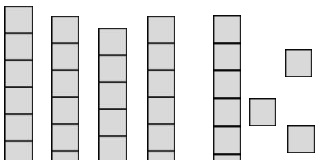


Step 2

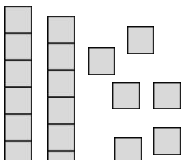


The children can now see the 53 represented as 40 and 13, still the same total, but partitioned in a different way, as in step 3 and can go on to take away the 26 from the calculation to leave 27 remaining, as in Step 4.

Step 3

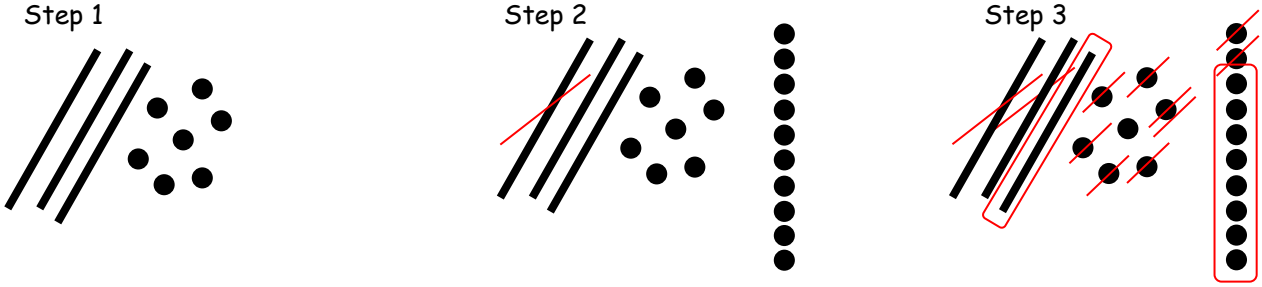


Step 4



When recording their own drawings, when calculating 37 – 19, children would cross out a ten and exchange for ten ones. Drawing them in a vertical line, as in Step 2, ensures that children create ten ones and do not get them confused with the ones that were already in place.

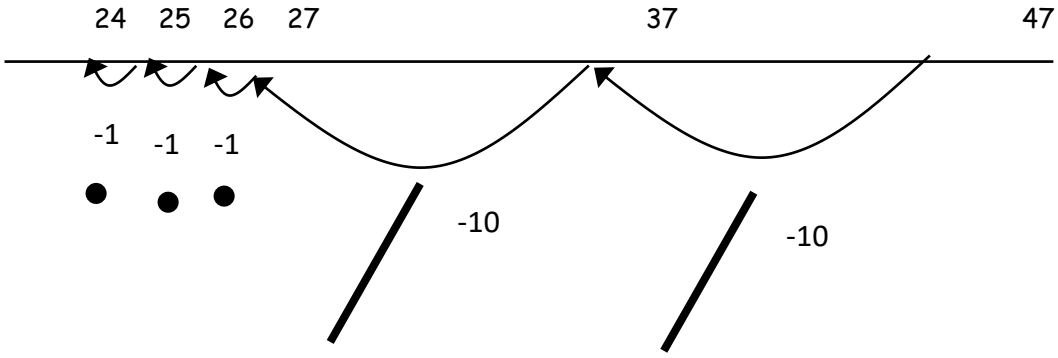
Step 1 Step 2 Step 3



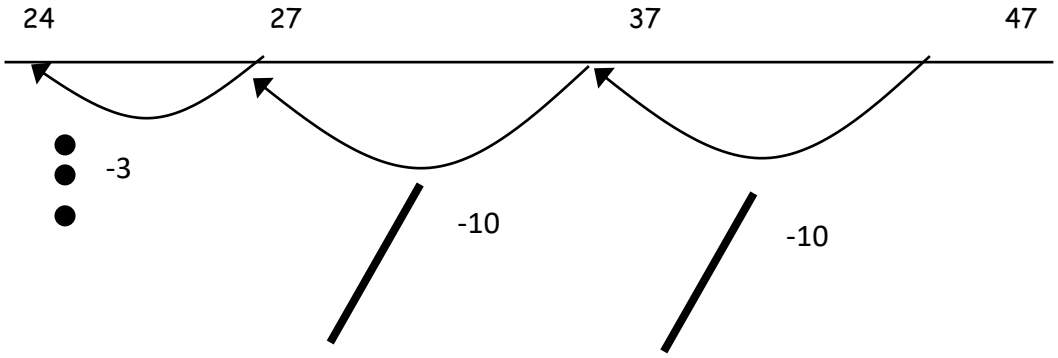
Circling the tens and ones that remain will help children to identify how many remain.

Subtraction using the number line

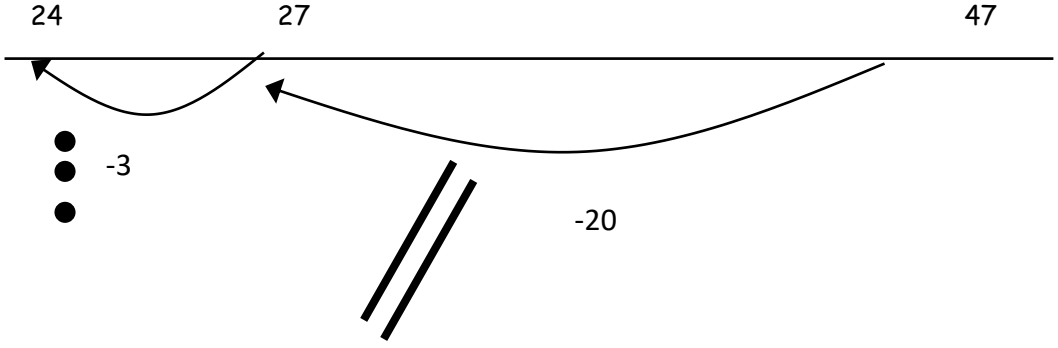
- **First counting back in tens and ones e.g.** 47 – 23 = 24.



- **Then helping children to become more efficient by subtracting the ones in one jump (by using the known fact 7 – 3 = 4) e.g.** 47 – 23 = 24



- **Followed by subtracting the tens in one jump and the ones in one jump e.g.** 47 – 23 = 24.



Which method will my child be using?

Multiplication

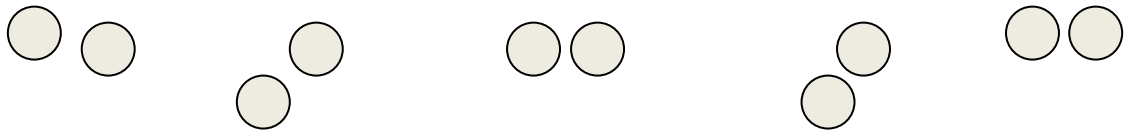
Year 2

Children should understand and be able to calculate multiplication as repeated addition, supported by:

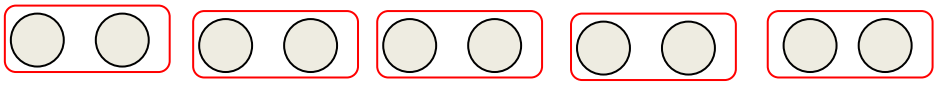
- counters, cubes and 100 bead strings
- number lines and empty number line
- written number sentence

Children will discuss and record 2 multiplied by 5 in different ways:
2 + 2 + 2 + 2 + 2 = 10
5 lots of 2
5 groups of 2
2multiplied by 5
2 x 5

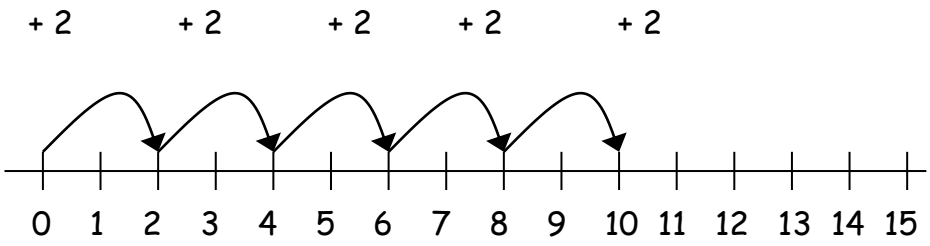
2 multiplied by 5 can be shown as five groups of two with counters, either grouped in a random pattern, as below:



or in a more ordered pattern, with the groups of three indicated by the border outline:

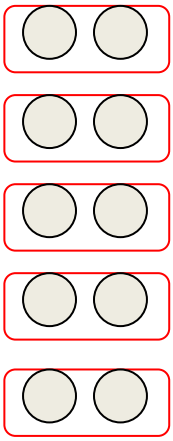


or as a repeated addition on a number line

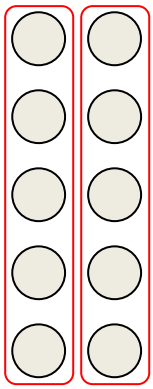


Children should then develop this knowledge to show how multiplication calculations can be represented by an array, (this knowledge will support with the development of the grid method in the future).

2 x 5 can be represented as an array in two forms (as it has commutativity):



2 + 2 + 2 + 2 + 2 = 10
2 x 5 = 10



5 + 5 = 10
5 x 2 = 10

Once children understand the commutative order of multiplication the order is irrelevant.

Partial tables/key facts box should be introduced every time children have learnt, understood and can recall multiplication facts. This method will also support doubling, halving, adding and subtracting.

1x	2
2x	4
4x	8
5x	10
10x	20
20x	40

Groups of 2
Partial tables/key facts box

1x	5
2x	10
4x	20
5x	25
10x	50
20x	100

Groups of 5
Partial tables/key facts box

1x	10
2x	20
4x	40
5x	50
10x	100
20x	200

Groups of 10
Partial tables/key facts box

Which method will my child be using?

Division

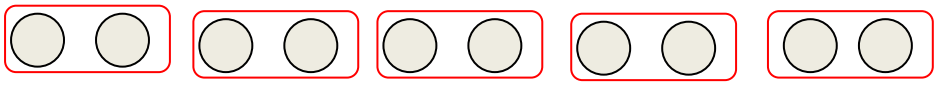
Year 2

Children should understand and be able to calculate division as repeated subtraction, supported by:

- counters, cubes and 100 bead strings
- number lines and empty number line
- written number sentence

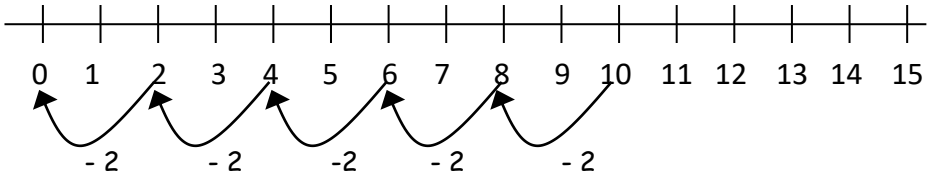
Children will utilise practical equipment to represent division calculations as grouping (repeated subtraction) and use jottings to support their calculation, e.g.

10 ÷ 2 = 5

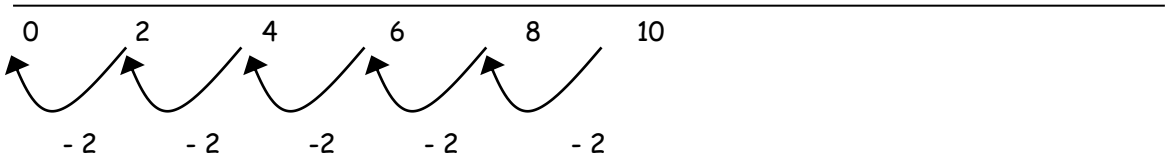


Children need to understand that this calculation reads as 'How many groups of 2 are there in 10?'

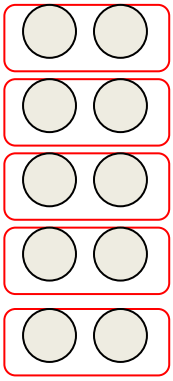
Number lines can be used to model and record repeated subtraction:
Number sentences are always recorded e.g. 10 ÷ 2 =5



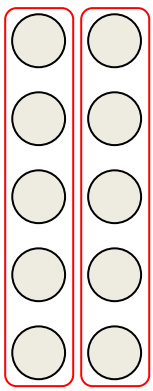
Number lines will be progressed into **empty number lines** to model and record repeated subtraction:
Number sentences are always recorded e.g. 10 ÷ 2 =5



Children should then develop this knowledge to show how division calculations can be represented by an array.
10 ÷2 = 5 can be represented as an array in two forms:



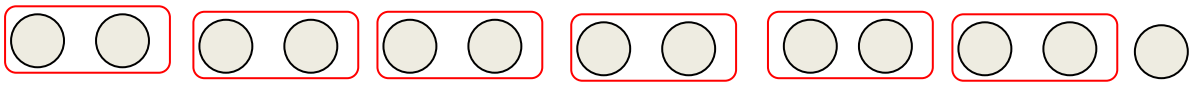
10 divided into groups of 2 = 5
10 ÷ 2 = 5



10 divided into groups of 5 = 2
10 ÷ 5 = 2

Remainders

Children should also continue to develop their knowledge of division with remainders, e.g.
13 ÷ 2 = 6 remainder 1



Children need to be able to make decisions about what to do with remainders after division and round up or down accordingly. In the calculation 13 ÷ 2, the answer is 6 remainder 1, but whether the answer should be rounded up to 7 or rounded down to 6 depends on the context, as in the examples below:

I have £13. Books are £2 each. How many can I buy?
Answer: 6 (the remaining £1 is not enough to buy another book)

Apples are packed into boxes of 2. There are 13 apples. How many boxes are needed?
Answer: 7 (the remaining 1 apple still needs to be placed into a box)