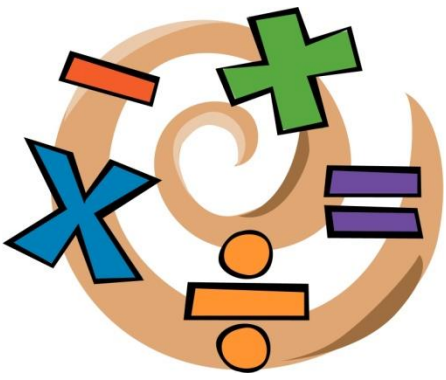
Helping your child with Maths!

Number and Calculations

The work your child is doing in Maths at school may look quite different from the 'sums' you remember. This is because children are encouraged to develop a greater understanding of number to enable them to do calculations mentally, where possible, using informal jottings to support their thinking.

Within our Maths lessons we teach a multitude of strategies to ensure children develop fluency, mathematical reasoning and competence in solving increasingly sophisticated problems.

We provide children with a bank of strategies on which they can draw depending on their individual needs. For example, some children may need to work practically using manipulatives, some may use written methods and others will move on to solve problems using mental strategies alone. However, children are given the opportunity to discuss the efficiency and suitability of different strategies and are encouraged to find the strategy that works best for them.



How You Can Help

It is important to encourage your child to ask the following questions:

- Can I do this in my head?
- Can I use anything to help me? E.g. practical equipment
- Could I use drawings or jottings to help work the answer out?
- What strategies have a learnt to help me solve this?

Encouraging children to ask these sorts of questions helps to build their independence. It is also important to encourage your child to estimate and check their answer carefully. Children should ask themselves:

- Is the answer sensible?

Number Sense

Most children learn to count to 10 because it is like learning a rhyme.

However, it is important children have a clear understanding of the value of each numeral. We do this by:

- Matching objects to the numeral
- Ordering the numbers in a line
- Hiding a number and asking 'Which one is missing?'
- Writing the numbers

Children are encouraged to show numbers using their fingers. At first children will count fingers individually but they need to begin to recognise that 5 is all the digits on one hand and therefore 6 is all the digits on one hand plus one more finger.

Children begin by counting to 10 (forwards and backwards) and then to 20. They can find the 'teen' numbers tricky and often reverse these digits.

Next children begin to read and write 2-digit numbers. To support children's understanding of 2-digit numbers we use a 100-square:

The Hundred square is a useful aid to support counting. It is important children recognise that the 100 square is a sequence of numbers in order from 1-100 and that the numbers are laid out in a square rather than a track. We also use the hundred square to recognise patterns in number sequences e.g. multiples of 2, 5 and 10.

Key questions you can ask include:

- Can you put your finger on the number ....?
- Can you find 1 more/1 less than ....?
- Can you find 10 more/10 less than ...?
- Can you colour the multiples of 2, 5 and 10?
- What do you notice about the multiples of 2, 5 and 10?

Place Value

Children love to read numbers to 100. When learning about place value their are a range of strategies we teach the children.

Unifix Cubes

We use unifix cubes to make the numbers. We encourage children to seperate the number into tens and ones. In the beginning children will work with teen numbers. They will count out the correct number of cubes then make a tower of ten and count the remaining cubes. Key questions at this point include: *How many cubes will you need? How many tens are in ...? How many ones are left over? How many have you got altogether?*

Dienes and Place Value Counters

Then the children use dienes (rods and cubes) and place value counters to represent the tens and units. This also helps them develop an understanding of the size of the number and the value of the digit.

Place Value Cards (Arrow Cards)

These are used to make and partition numbers into hundreds, tens and units.

Addition

Children are taught to understand addition as combining two sets and counting on.

Physical counting with practical equipment

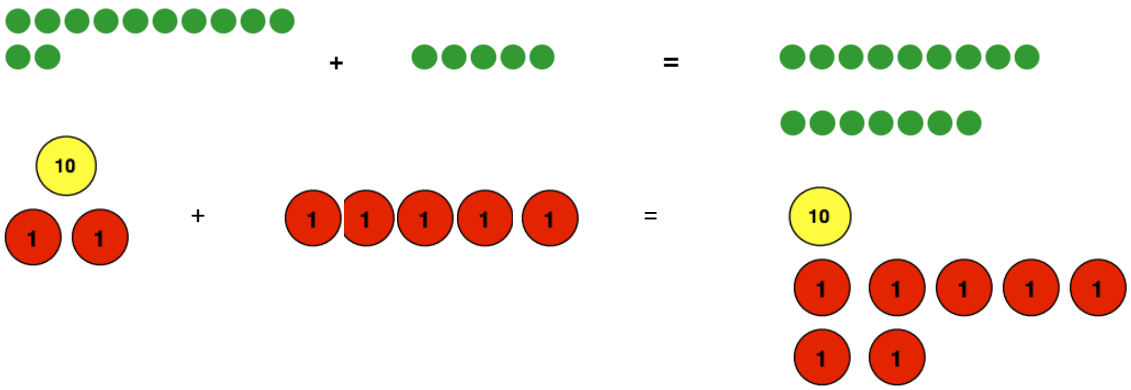
Initially addition number problems should be tackled practically by physically counting with a range of objects e.g. unifix cubes, pegs, fingers or any moveable objects.

When counting on their fingers children should put the largest number in their head then count on their fingers.

Drawings and Jottings

When confident counting practically, children should begin to represent addition number problems with jottings e.g. they may choose to draw dots or pictures to represent the objects. We also encourage children to draw around the diennes, place value counters or coins (10ps and 1ps) to represent the tens and units. At the end they should combine them and find the total.

For example: 12 + 5 = 17



Number Facts & Bonds

Learning number facts will help children develop their ability to solve calculations mentally. We begin with learning number bonds to 10 i.e. the pairs of numbers that make 10.

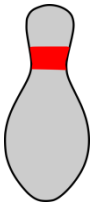
5 and 5 add up to 10
6 and 4 make it again
7 and 3 will also do
Look carefully, so do 8 and 2
9 and 1 and 0 and 10
Complete the ways of making 10

Children need to be encouraged to spot these number bonds when problem solving.

Doubles of numbers to 5 and then 10

Learning the doubles of numbers helps children to have a bank of number sentences they know. They can then begin to use these to solve other number sentences. For example, if they know 5 + 5 is 10 they should know 6 + 5 is 1 more.
Children can use their fingers for doubles up to 5 but games like darts or skittles where their score is double the number they hit can also be a good way to learn.





Adding a 1-digit Number

Children can use the 100 square initially to support counting on but should aim to add 1-digit number mentally. They can always use the 100 square to check answers.

We say to the children, "Put the biggest number in your head and count on". This is where they may use their fingers too.

Adding a 2-digit Number

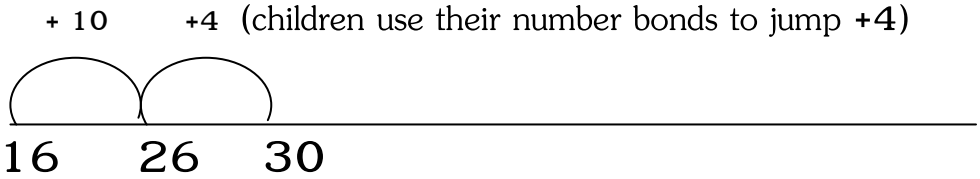
Children are also taught to use a Number Line to help them record the steps they have taken in calculations. For example:

15 + 12 = 27

This is straightforward jumps of +1 when adding a 1-digit number but adding a 2-digit number requires children to partition into tens and ones; adding the tens first and then the ones.

Children with a good understanding of number facts will begin to use these to support this strategy and should be encouraged to do so. For example,

16 + 14



Partitioning each number into tens and ones will help children to see that they can collect the tens together and then the ones. We encourage children to follow these steps:

- Partition the numbers into tens and ones
- Total the tens
- Total the ones
- Collect the answers and find the overall total

Example:

34 + 23 =

30 + 20 = 50
4 + 3 = 7
So 50 + 7 = 57

The children then learn to use these methods to add numbers crossing the tens barrier and to add 2 three-digit numbers.

Example:

37 + 26=
30 + 20 = 50
7 + 6 = 13
50 + 13(10 + 3)=60 +3=63

Subtraction

Children are taught to understand subtraction as taking away (counting back) and finding the difference (counting up).

Physical counting with practical equipment

Initially subtraction number problems should be tackled practically, physically taking away a range of objects e.g. unifix cubes, counters, cars or toys.

Drawings and Jottings

Drawing pictures or providing images helps children to visualise the problem. For example,

A teddy bear costs £5 and a doll costs £2. How much more does the teddy bear cost?

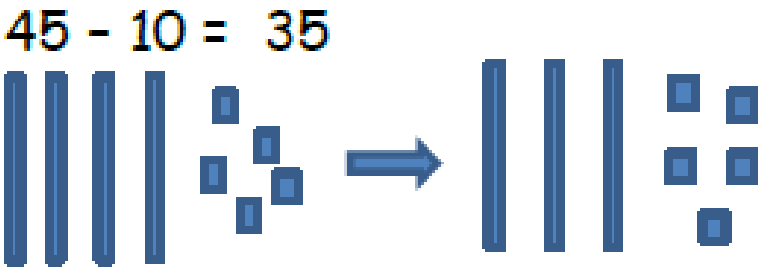
Learning to count backwards will help children to take away. It sounds simple but a lot of children struggle to count backwards in 1's, especially when crossing the tens barrier e.g.

42,41,40,39,38,37

The hundred square is a good tool to support counting back. However, reinforcing learning using different strategies is also important.

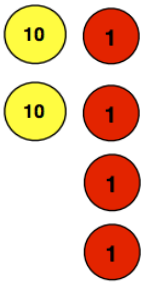
Using Dienes and Place Value Counters

These are great for taking away ten or multiples of ten.



We also teach children to exchange the ten (tens diene or counter) for ones when necessary. For example,

24 – 15 =



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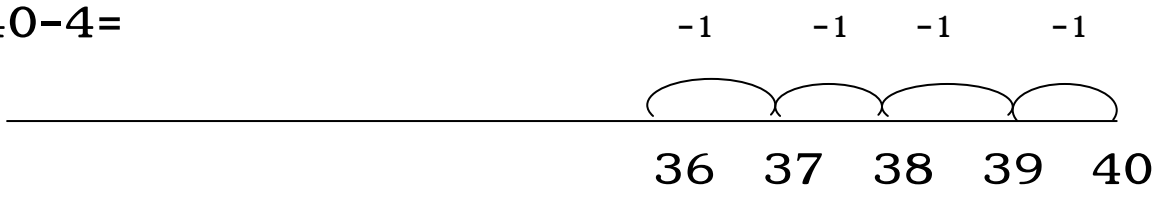
Through discussion and modelling children realise they will only be able to take away 14 and therefore need to exchange one of the tens for 10 ones.

Using a Blank Number Line

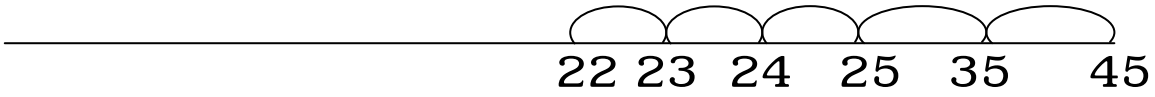
Children can use a blank number line to count back on. This is a good way to record the steps they have taken to subtract. For example,

40-4=



Children can use the blank number line to take away two 2-digit numbers by partitioning the number they are taking away (take away tens first and then the units).

45-23 is 45-20-3



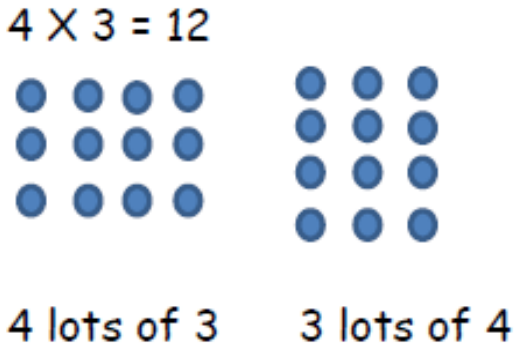
Multiplication

Children are taught to understand multiplication by drawing arrays and as repeated addition.

Counting in steps of 2, 5 and 10 helps children with multiplication later on. Children begin by learning doubles of numbers to double 10 and later draw links with the 2 x table.

Drawing an Array

Drawing an array gives the children a visual image of the answer. It also helps them develop the understanding that 4 x 3 is the same as 3 x 4. See the array below:



Repeated Addition

Using objects or drawings will help children to understand multiplication as repeated addition. For example,

Each child has 2 shoes. How many shoes do 4 children have?

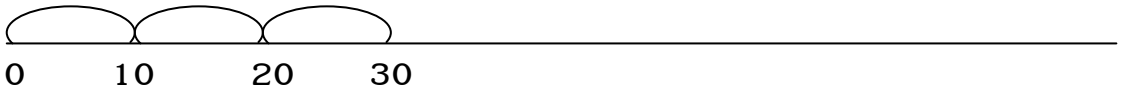
Grouping

Groups can be drawn to help understanding. For example,

If there are 5 cakes in a pack, how many cakes are there in 3 packs? 3 x 5

Children can also use the blank number line to count on in equal jumps. For example,

If 3 cats have 10 kittens each, how many kittens are there altogether?



When children begin working with 2 digit numbers they can partition into tens and units. For example,

16 x 5 = 80

10 x 5 = 50

6 x 5 = 30

Division

Children are taught to understand division as sharing and grouping. Again, counting in steps of 2, 5 and 10 helps children with division later on.

Working Practically and Drawing Pictures

Children begin by sharing objects practically. Then they can move on to drawing pictures to solve the problem. For example,

6 cards are shared between 2 children. How many cars does each child get?

Dots, letters or marks can be shared one at a time between the groups. For example,

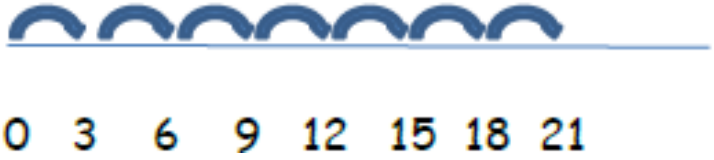
15 apples are shared equally between 5 baskets. How many apples are in each basket? Sharing equally between 5:

a a a	a a a	a a a	a a a	a a a

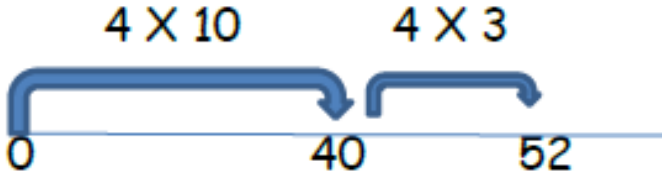
Or, 5 apples are packed into a basket. How many baskets can you fill with 15 apples?

To work out how many 3's there are in 21, the children draw jumps of 3 along a number line. For example,

If 1 sweet costs 3p. How many sweets can I buy with 21p?



It would take a long time to jump in 4's to 52 so children begin to use their knowledge of times tables to jump in bigger 'chunks'. A jump of 10 lots of 4 takes you to 40. Then you need 3 lots of 4 to make 12 to reach 52.



Key Vocabulary

Learning the different vocabulary supports children to know which calculation they need to use to solve a problem.

Addition	Subtraction
➢ Add ➢ Total ➢ Altogether ➢ Plus ➢ More	➢ Subtract ➢ Take-away ➢ Difference ➢ Minus ➢ Less
Multiplication	**Division**
➢ Lots of ➢ Multiply ➢ Times ➢ Double	➢ Divide ➢ Share equally ➢ Half