

How we teach Maths at Ellingham Year 2



MATHEMATICS

A helpful guide for
parents

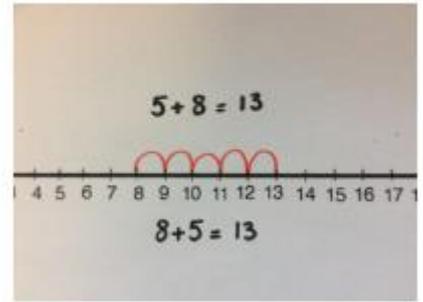
Addition

Addition is taught in the following stages:

Number lines

Children will start with the larger number and count on the correct number of jumps, e.g. $5 + 8$ would be 'start at 8 and jump on 5, what number have I landed on?'

They will then move on to larger numbers on the number line, e.g. $28 + 8$.



Partitioning

Children will use the 'Base 10' resources to begin adding with larger numbers.

44 + 31

What are the tens worth?

70 + 5

How many ones?

What is the total?

The children will move on to adding numbers that cross the tens boundary - this can be quite a tricky concept, but the 'Base 10' resources and really help.

47 + 35

Exchange the ten ones for a ten.

Partitioning (counting on)

This is a vital stage before the children move on to using number lines and column addition methods to add larger numbers. At this stage, the children may begin to draw the resources (as lines and dots) for speed when working.

48 + 37

Put the larger number in your head.

Count on the tens

Count on the ones

58 68 78 85

Column addition

In Year 2, the children will begin to use the formal written method of 'column addition'. This is moving the children away from concrete resources and pictorial representations and moving them closer to using methods that they will use as they move up the school.

They will then move to the tens column and add the two numbers in that column, placing their answer in the row underneath.

	T	O
	5	2
+	4	1
<hr/>		
	9	3

The children will begin by adding the two numbers in the ones column and placing their answer in the box underneath.

Column addition with exchanges

When the children are ready, they will move on to using column addition to add numbers that will cross the 'tens' boundary.

They will then move to the tens column and add the three numbers in that column, placing their answer in the row underneath.

	T	O
	1	7
+	2	4
<hr/>		
	1	
<hr/>		
	4	1

The children still start with the 'ones' column - adding the two numbers together. As the answer is bigger than 10, the 'tens' digit from the answer moves over to the 'tens' column.

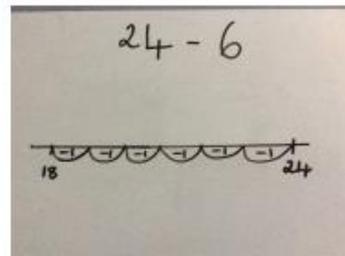
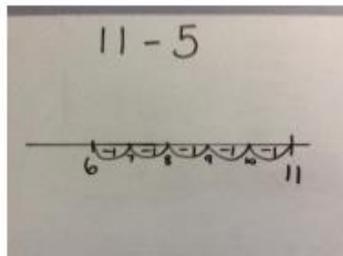
When we are working with numbers that cross the 'tens' boundary, we leave an extra row for the additional numbers.

Subtraction

Subtraction is taught in the following stages:

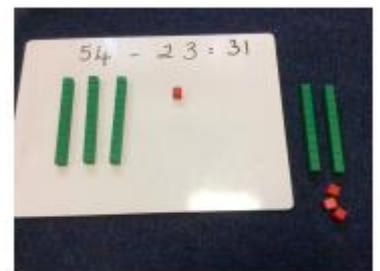
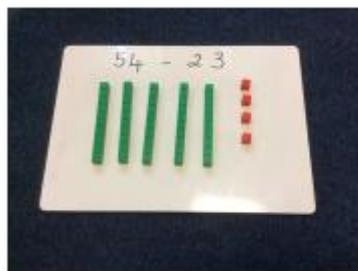
Number lines

Children will begin by using a number line, before moving on to a blank number line and then larger numbers. Each time, they will begin with the larger number and count backwards in ones.



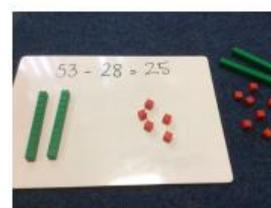
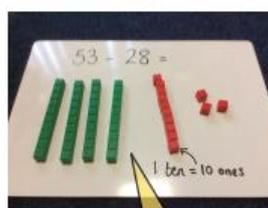
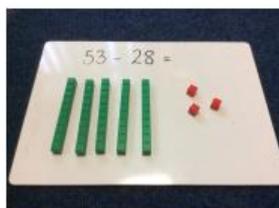
Subtracting by partitioning with Base 10

Children will use 'Base 10' and to begin subtracting with larger numbers.



Partitioning with exchanges

Children will use Base 10 to develop an understanding of the exchanging method. The children know from previous concepts that 10 ones are equal to (the same as) 1 ten - allowing them to exchange between tens and ones confidently.

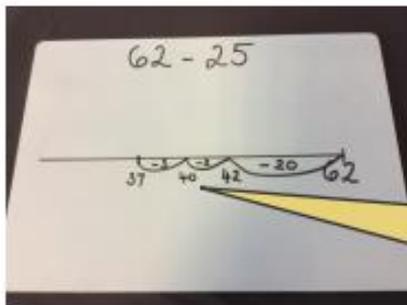
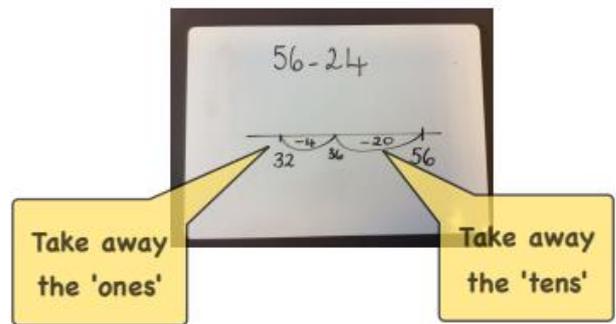


Exchange one ten for ten ones

Solve it!

Number lines

The children will use their understanding of number lines to begin to subtract larger numbers using the counting back and partitioning method.



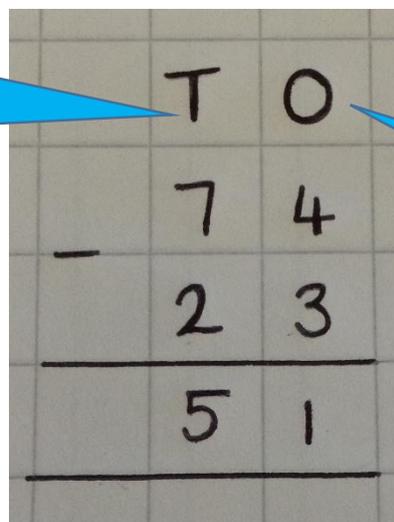
'Bridge' to the next ten

Then, when the children are ready, they will move on to crossing the 'tens' boundary. This will involve taking away the tens, taking away what is left to 'bridge' to the next ten and then ending with taking away to ones.

Column subtraction

In Year 2, the children will begin to use the formal written method of 'column subtraction'. This is moving the children away from concrete resources and pictorial representations and moving them closer to using methods that they will use as they move up the school.

They will then move to the 'tens' column and use same method, subtracting the smaller number from the larger number.



The children still start with the 'ones' column - subtracting the smaller number from the larger number.

Multiplication

Multiplication is taught in the following stages:

Making and adding equal groups

Children should use their knowledge from Year 1 to be able to make equal groups to demonstrate and develop their understanding of the word 'equal'. The children then begin to connect equal groups by using repeated addition.



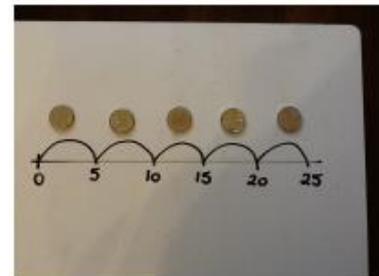
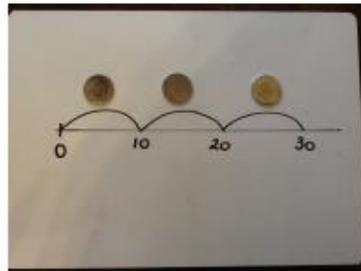
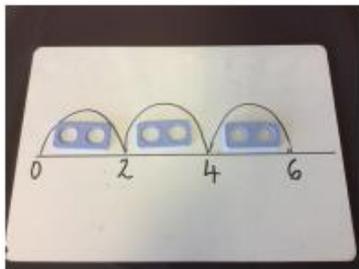
There are ___ equal groups with ___ in each group.
 There are ___ 3s.
 ___ + ___ = 6



There are ___ equal groups with ___ in each group.
 There are three ___s.
 ___ + ___ + ___ = 12

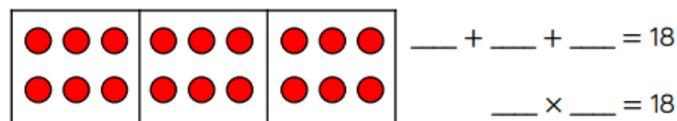
Counting on number lines

The children will use coins, pictures and Numicon on number lines to help them visualise the times table that they are counting in.



The multiplication symbol

The children will be introduced to the multiplication symbol (x) for the first time. They will make links between multiplication and repeated addition, using stem sentences to support their understanding.

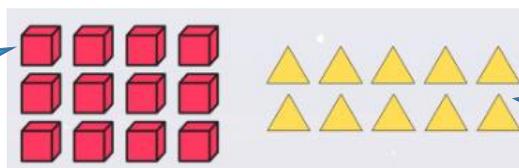


There are ___ equal groups with ___ in each group.
 There are three ___.

Using arrays

Children will begin to explore arrays to see the commutativity of multiplication facts. Commutativity is the understanding that 5×2 is the same as 2×5 . The language of 'lots of', 'multiply' and 'times by' should be used alongside each other.

This array shows
 4 lots of 3 or 3 lots of 4
 (4×3 or 3×4).



This array shows
 5 lots of 2 or 2 lots of 5
 (5×2 or 2×5).

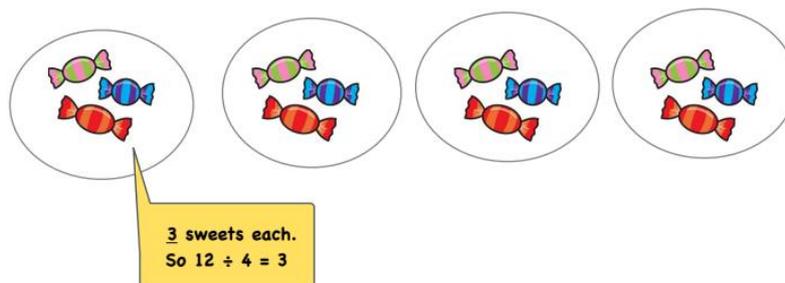
In Year 2, the children will focus on their 2s, 5s and 10 times tables. They will do this throughout the Maths curriculum and through constant practise.

Division

Division is taught in the following stages:

Sharing equally

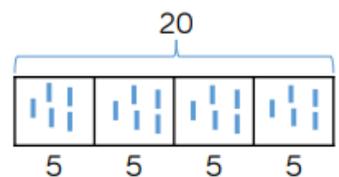
Children will recap on the idea of division as sharing, for example, 12 sweets shared equally between 4 children. How many sweets will they get each?



The division symbol

Children will be introduced to the division symbol (\div). They will begin to see the connection between multiplication (\times) and division (\div).

Ron draws this bar model to divide 20 into 4 equal groups. How does his model represent this? He writes $20 \div 4 = 5$

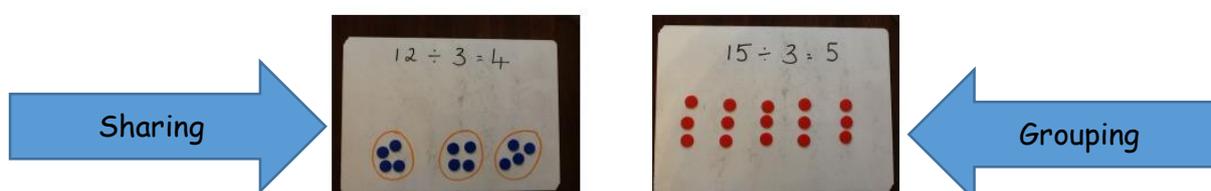


Grouping

Children need to understand that division can also be shown as 'grouping'. Again, this will need to be done practically, for example, $12 \div 4$, the children will have 12 objects and they will make equal groups of 4, they will then count how many equal groups of 4 they have created.



For both 'grouping' and 'sharing', children will be encouraged to use counters or cubes or to draw pictures to help them visualise their learning.



Using fingers

It is vital at this stage that children understand division as 'How many ___ in ___?' E.g. $20 \div 5$ as 'How many 5's in 20?' They should be encouraged to count on their fingers (or use multiplication facts) to help them work out questions like this efficiently.

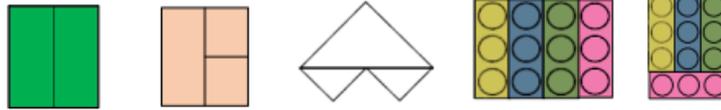


5, 10, 15, 20. So
there are 4 lots
of 5 in 20.

Fractions

Children will already have developed an understanding of a whole being one object or quantity. In Year 2, the children will begin to explore making and recognising equal and unequal parts. They should do this both using real-life objects as well as pictorial representations of a variety of shapes and quantities.

Look at the representations. Decide which show equal parts and which show unequal parts.



Recognising and making a half

Children in Year 2 understand that halving is splitting a whole in two equal parts. This is when they will be introduced to the notation $\frac{1}{2}$ for the first time - they will begin to use this alongside stem sentences and 'half' or 'halves'.

The whole gummy bear is split into ____ equal parts.

Each part is worth a _____.

This can be written as



The children will also be introduced to the vocabulary 'numerator' and 'denominator'.

Denominator: the equal number of parts something has been divided into.



Numerator: the amount of equal parts shaded.

Finding a half

When the children are finding a half of an amount, they will begin to make links to counting in 2s and dividing by 2. The children will do this practically to start with (using cubes, coins, counters) before moving on to using their division knowledge.

Circle half the cakes.



$$\frac{1}{2} \text{ of } 6 = \square$$

$$\frac{1}{2} \text{ of } 8 = \square$$

Recognising and finding a quarter

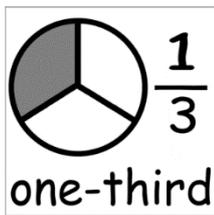
Children find quarters of shapes, quantities and objects. They begin by physically sharing amounts into four equal groups before moving on to using their understanding of division.

Share the smarties equally between 4 people.
The smarties are split into ____ equal parts.
Each part is worth a _____.

This can be written as

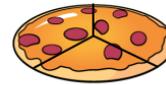


Recognising and finding a third



Children apply their understanding of finding a half and a quarter to finding thirds. They continue to use the language of 'whole' and 'equal parts' and understand that one third is equal to one part out of three equal parts.

Three friends are sharing a pizza.



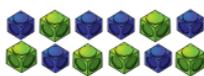
The pizza is split into ____ equal parts.

Each part is worth a _____.

This is the same as

The children will continue to use their knowledge of division and sharing in order to find a third of different quantities. They will use concrete resources and pictorial representations to support their understanding.

Use the cubes to make three equal groups.



There are ____ cubes altogether.

One third of ____ is ____

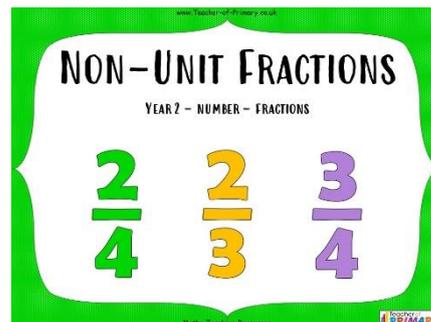
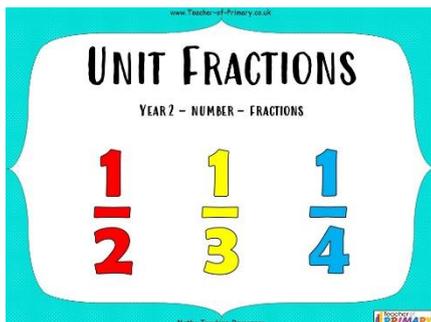


of ____ is ____

$$\frac{1}{3} \text{ of } 9 = \square$$

$$\frac{1}{3} \text{ of } 12 = \square$$

Unit and non-unit fractions



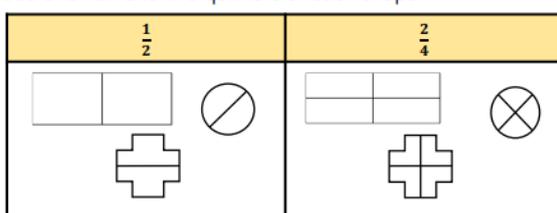
Unit fractions are any fractions where the numerator is 1.

Non-unit fractions are any fractions where the numerator is 2 or more.

Equivalence (the same) between 1/2 and 2/4

Children explore the equivalence of two quarters and one half of the same whole and they begin to understand that they are the same. They will tackle this aspect of fractions practically using bits of paper and concrete resources.

Shade one half and two quarters of each shape.



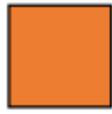
To complete this activity, the children will use concrete resources and make the amount needed before sharing it between either 2 (to find a half) or 4 (to find a quarter). They will then see that their answers are the same.

Shape

Before learning about the properties of shapes, the children need to consolidate their learning from Year 1 by recognising and naming both 2D and 3D shapes. In Year 2 the children will focus on these 2D shapes:



Pentagon



Square



Rectangle



Triangle



Circle

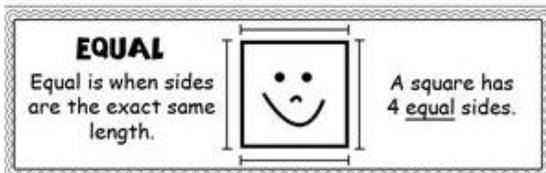
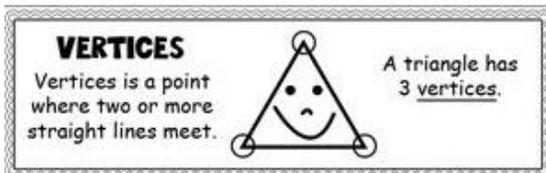


Hexagon

Properties of shapes

Children will be encouraged to develop strategies for accurate counting of sides and vertices (corners) on 2D shapes and faces, vertices and edges on 3D shapes. They will also begin to notice when sides are equal, e.g. on a square and pairs of equal sides on a rectangle.

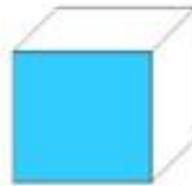
Children are introduced to the terms vertex (one corner) and vertices (multiple corners). They understand that corners are vertices and they are able to count these on different shapes. The children will handle shapes to be able to count sides and vertices before moving towards drawing their own shapes.



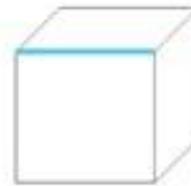
2D shapes

Sorting 2D shapes

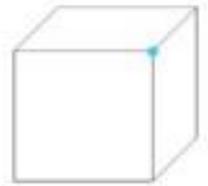
Children will recognise and sort 2D shapes in many different ways, this could be by shape, e.g. squares, circles etc. but the children will also be encouraged to sort the shapes according to their properties, e.g. number of sides, number of vertices or even lines of symmetry or no lines of symmetry.



Faces
Faces are the flat surfaces of a 3D shape



Edges
Edges are the lines where two faces meet.

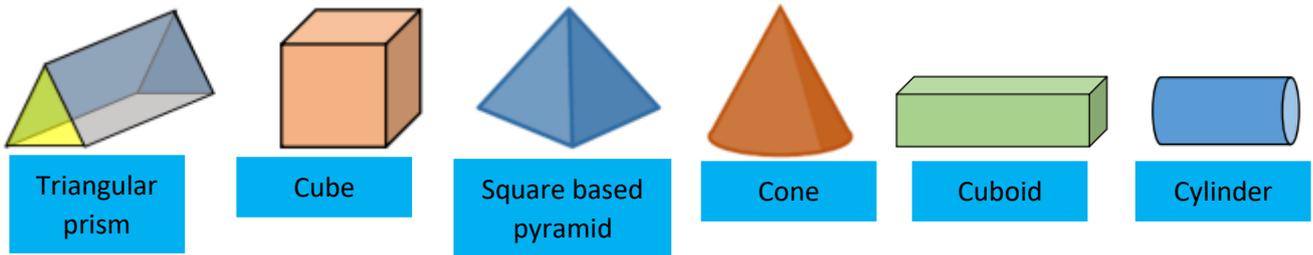


Vertices
Vertices are the places where 3 or more edges meet.

3D shapes

3D shapes: faces, edges and vertices

In Year 2, the children will identify and name these 3D shapes:



Children use their knowledge of the properties of shape to sort 3D shapes. The children will have access to a range of real-life objects to sort and compare as well as the 3D shapes that we have in school.

Lines of symmetry

Children are introduced to vertical lines of symmetry. Children use a range of practical resources (mirrors, paper folding and geoboards) to explore shapes being halved along their line of symmetry. The children will use their knowledge of fractions to understand that to have a line of symmetry, the shape needs to be split into two equal parts.

