Maths Workshop

The Horsell Village School
November 2024

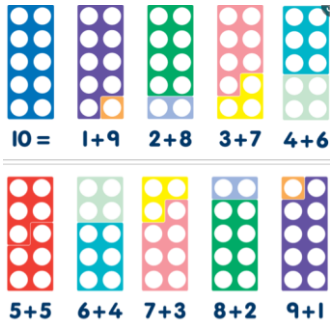
The aims of this presentation are to share with you :

- The aims of the Maths National Curriculum.
- What does Maths look like at HVS?
- Developing Number sense.
- The 3 spines of Maths Mastery.
- What else do we teach in Maths?

The three aims of the maths curriculum are:

Department for Education

Number fluency

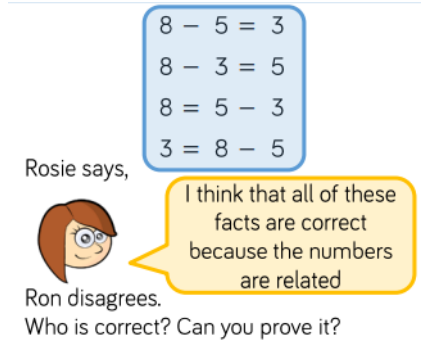


Problem Solving

Fill in the circles with either <, > or =

6 + 4	◯	6 + 5
6 + 4	◯	3 + 6
11 – 4	◯	12 – 5
11 – 4	◯	12 – 4

Reasoning



Our Maths lesson will have an element of all 3 aims within it.
We teach through Maths Mastery, following White Rose Education and supported by the National Centre for Excellence in the Teaching of Mathematics (NCETM).

White Rose EDUCATION

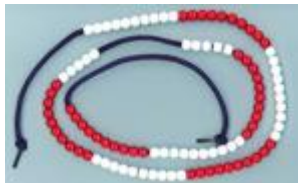
NCETM
NATIONAL CENTRE FOR EXCELLENCE IN THE TEACHING OF MATHEMATICS

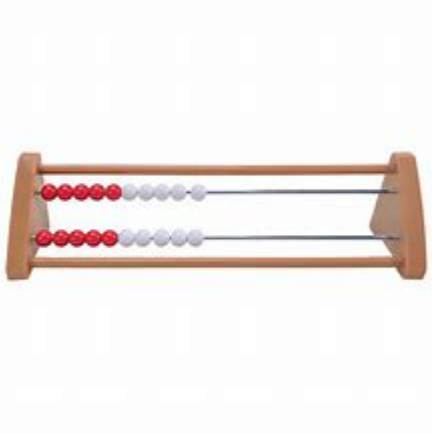
What does a Maths lesson look like?

Questioning is a key part of Maths. The teacher will ask key questions designed to prompt investigation and exploration.

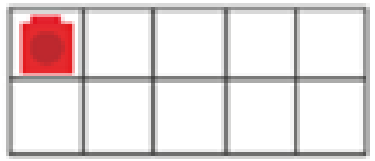
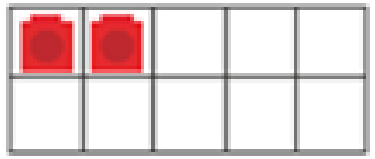
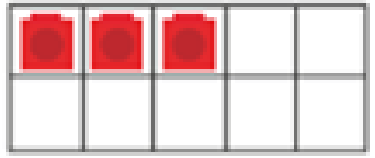
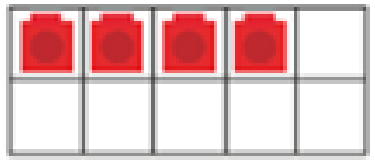
What do we do to help children achieve mastery?

We teach children how to use a variety of manipulatives. Once a child has mastered the key mathematical ideas using the manipulatives, they remain accessible. The children can then choose their preferred choice of learning, being concrete (manipulatives), pictorial or abstract, and return to use the manipulatives at any point in their exploration, should they feel that it will enhance their learning.



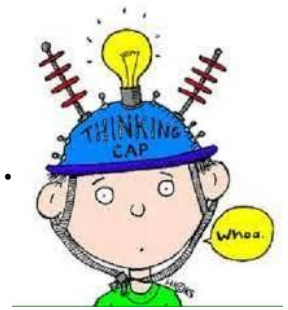


What do we do to help children achieve mastery?

Concrete (Physical Objects)	Pictorial (Drawings/Models)	Abstract (Using numbers)
		1
		2
		3
		4

Concrete and pictorial representations support children to understand abstract concepts and deepen their knowledge.

The starting point…. Number Fluency- Developing number sense



So….. What is number sense and why is it so important

Number sense refers to a child's fluidity and flexibility with numbers.

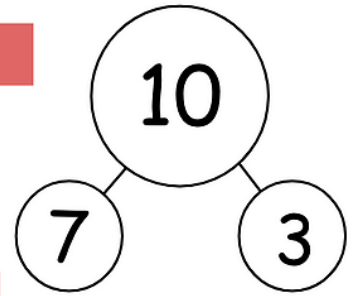
It helps children understand what numbers mean, increasing mental mathematics and giving children the tools to look at maths in the outside world and make comparisons.

So … where does it all begin and how do we support and plan for progression in number sense here at school?

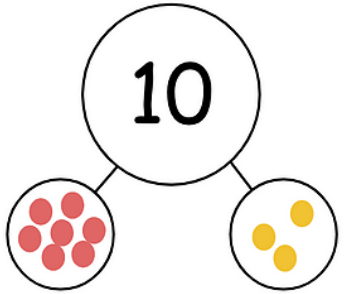
Children develop a number sense gradually over time through exploring numbers, visualising them in a variety of contexts and relating them in ways that are not limited by formal written methods.

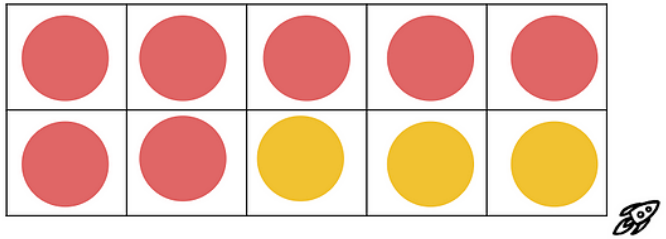
Number sense is the main focus on the Early Years Curriculum however forms an essential part of fluency for all year groups.

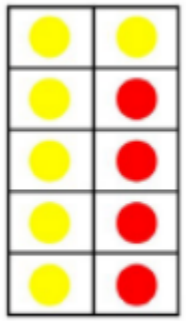
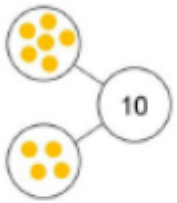
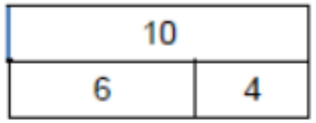
Same concept in different ways:



7 + 3 = 10





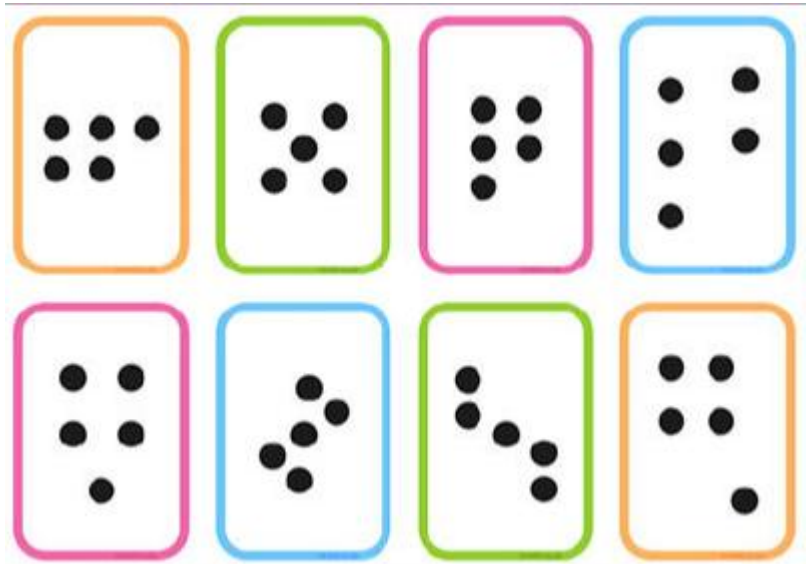
Tens Frame	Part Whole Model	Bar Model
 6 + 4 = 10 4 + 6 = 10 10 – 4 = 6 10 – 6 = 4	 6 + 4 = 10 4 + 6 = 10 10 – 4 = 6 10 – 6 = 4	 6 + 4 = 10 4 + 6 = 10 10 – 4 = 6 10 – 6 = 4

How do we help develop Number sense?

Subitising

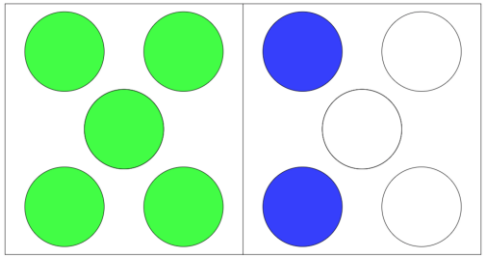
Don't count, say the amount.

Children need a variety of opportunities to see regular amounts of quantities and be encouraged to 'say what they see.'
These regular amounts also need to be shown in irregular ways:



* conceptual subitising
(seeing smaller numbers)

* perceptual subitising
(seeing numbers straight away)



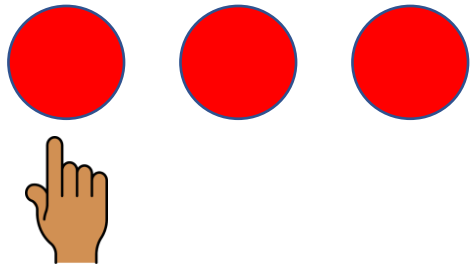
How do we help develop Number sense?

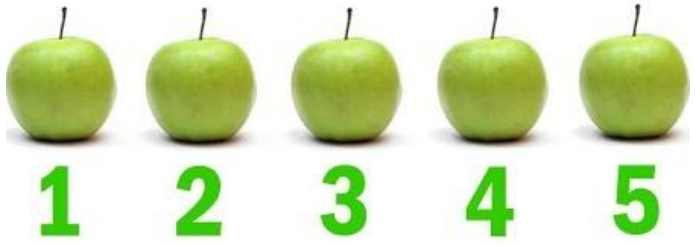
Counting

3 rules of counting

1.Count everything once
2. Say the numbers in the right order
3. The last number you say is how many there are

1:1 correspondence





How do we help develop Number sense?

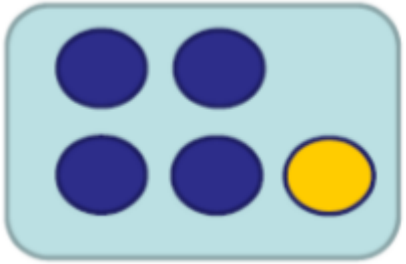
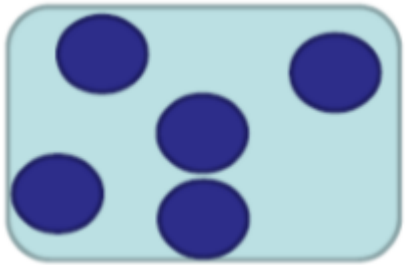
Cardinality

Cardinality means the quantity or total number of items in a set.

This can be determined by subitising or counting.
While subitising allows children to perceive the cardinality of small sets, counting requires them to understand that the last number in the counting sequence represents the quantity of the set. We refer to this as….

'The 5-ness of 5'

Subitising – is the process of immediately knowing how many objects are in a small group without needing to count them.

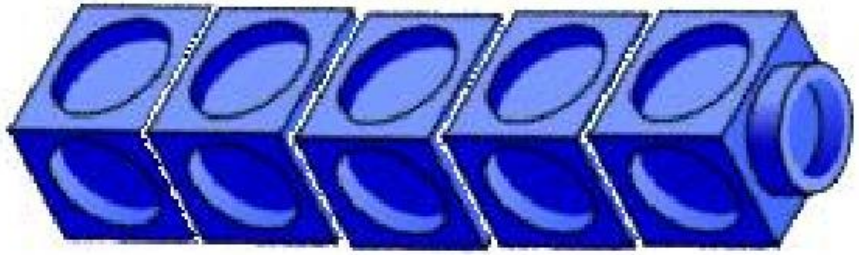
Familiar and structured dot patterns	Structure dot patterns	Unstructured dot patters
		

How do we help develop Number sense?

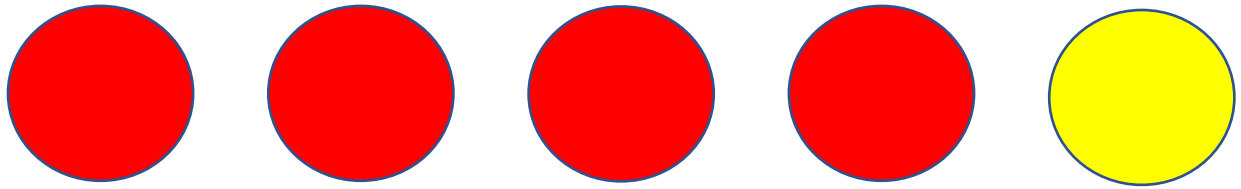
Composition

Composition refers to part part whole relationships. This is often referred to as the 'hidden numbers' with a number, ie: understanding that the number 5 can have several different parts in its composition.

For example



5 is the whole
2 is a part and 3 is a part



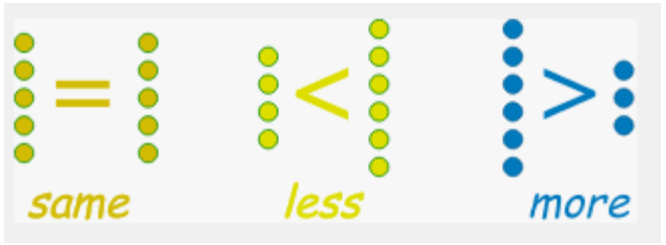
4 is a part and 1 is a part
5 is the whole

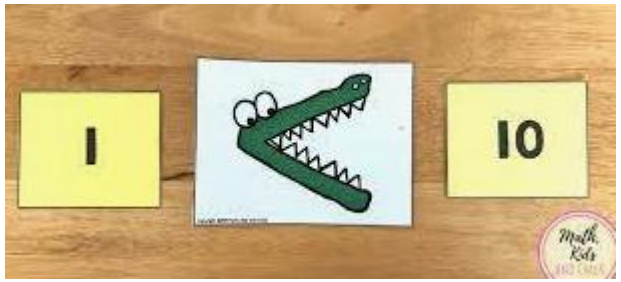
Being able to see numbers within numbers helps to develop efficient calculating skils

How do we help develop Number sense?

Comparison

When we ask children to compare numbers we are asking them to examine the difference, to decide if one number is greater than, smaller than or equal to another number.





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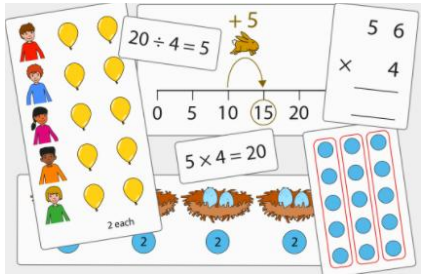
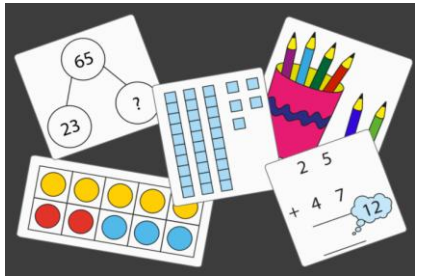
Primary Maths Mastery is based on 3 main 'spines'

This is a carefully sequenced progressive journey including:



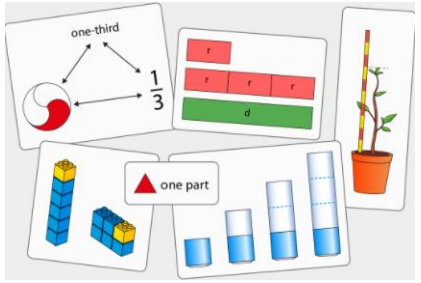
Number, addition and subtraction

- Whole and parts
- Composition of starting at 0-5 and building gradually up to 100
- Addition and subtraction strategies initially within 10 and then bridging 10
- Addition and subtraction of 1 digit and 2 digit numbers, extending to 2 digit and 2 digit numbers.



Multiplication and division

- Counting and unitising (counting groups rather than individual items, for example egg boxes, rather than individual eggs).
- Times tables : groups of 2s, 5s and 10s and commutativity
- Doubling and halving
- Division: sharing and applying knowledge of multiplication to solve grouping problems.



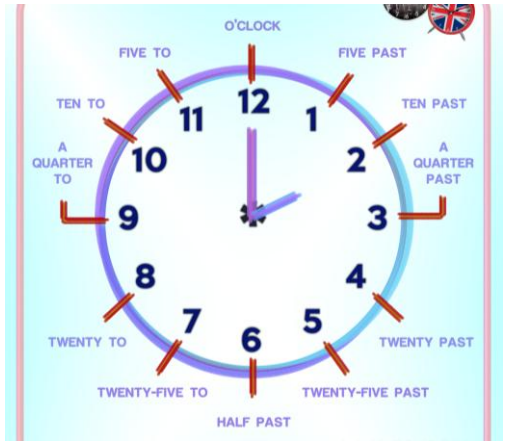
Fractions

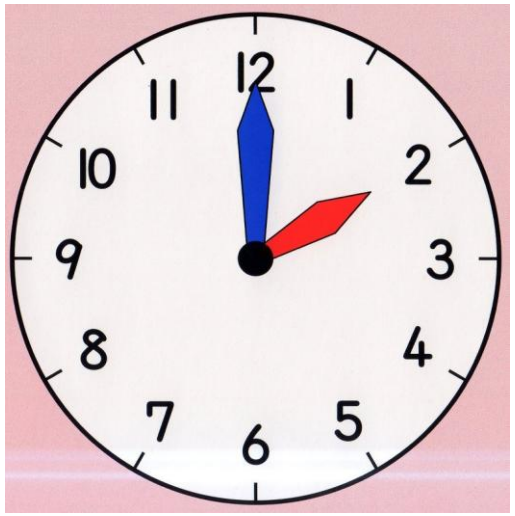
- Recognising and finding fractions of an object, shape and quantity, relating fractions of a quantity to previously taught division.

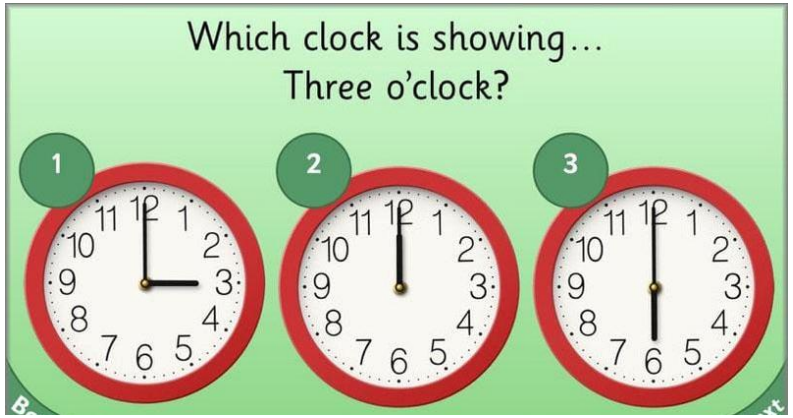
What else do we teach in Maths?

Time

We look at the names of the 'hands' and how they move. We discuss o'clock and half past the hour. In year 2 we look at telling the time using ¼ past and ¼ to the hour as well as 5 minute intervals.



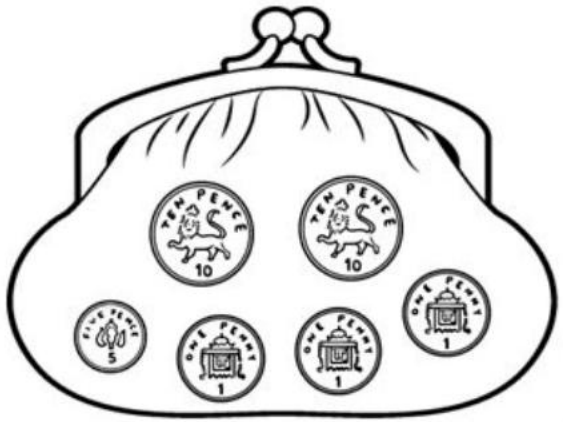




What else do we teach in Maths?

Money

We look at the names of coins and notes. We recognise coins and notes and what the value is of each coin.
We discuss how some coins are worth the same as another coin (eg. 1p + 1p = 2p).
We add up coins to find the total and in Year 2 we look at making change when we need to 'buy' something.



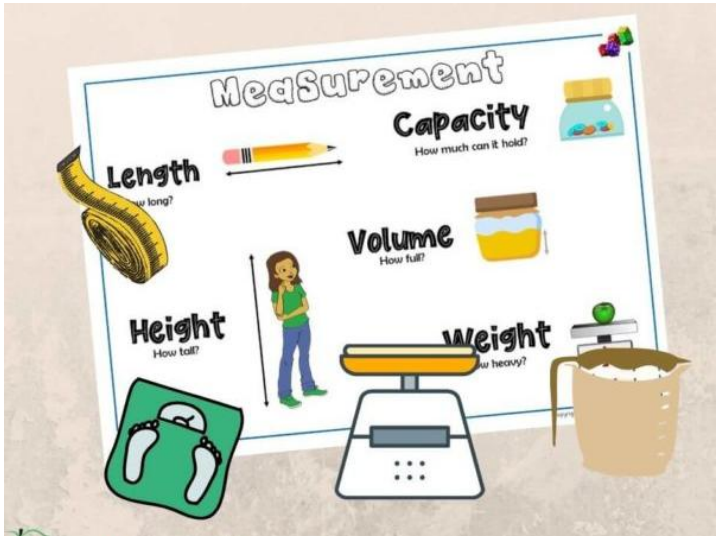
What else do we teach in Maths?

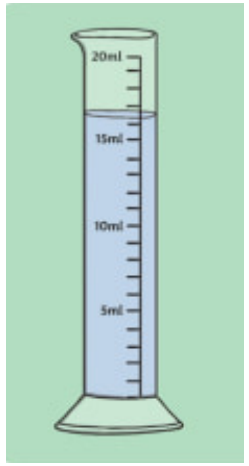
Measurement

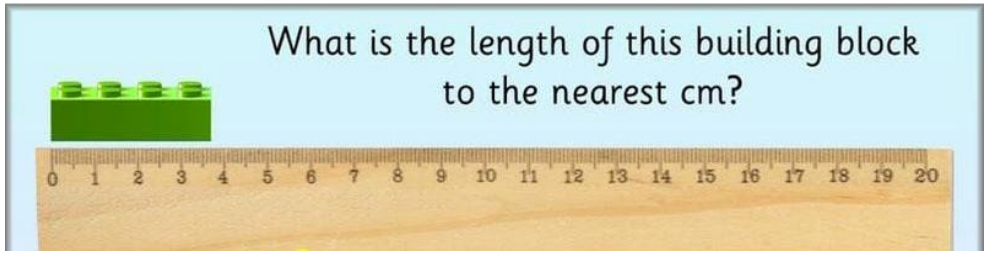
We discuss capacity, mass/weight and length/height.

We describe and solve practical problems and explore intervals in cm, m, ml, g and kg by using weighing scales, rulers and containers.

We sequence events in chronological order and use language relating to dates (days, months, years).







What else do we teach in Maths?

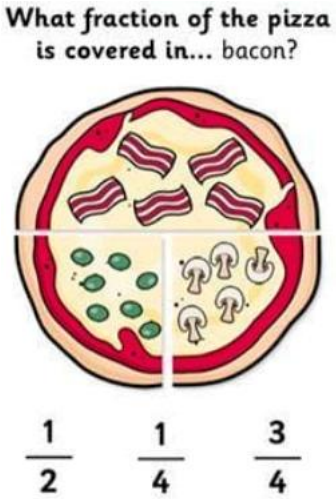
Fractions

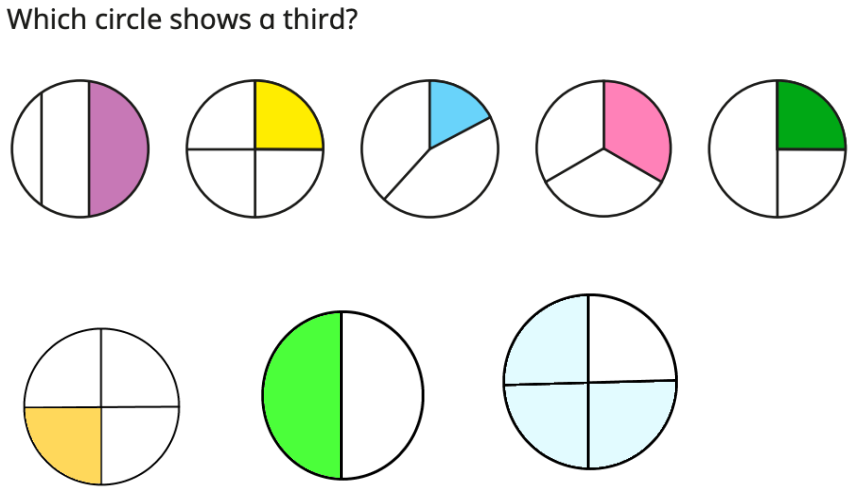
We recognise, find and name a half, as one of two equal parts.

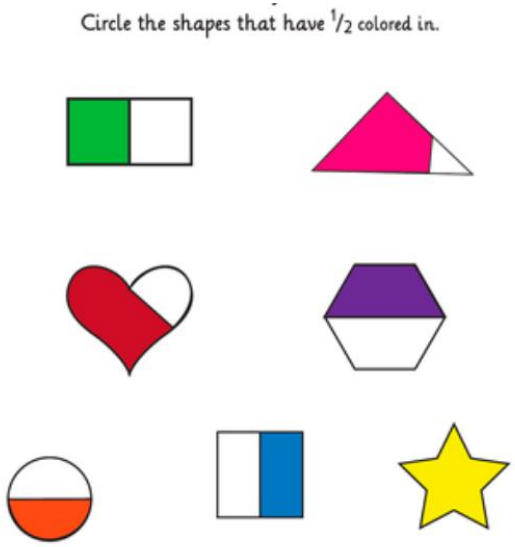
We recognise, find and name a quarter as one of four equal parts.

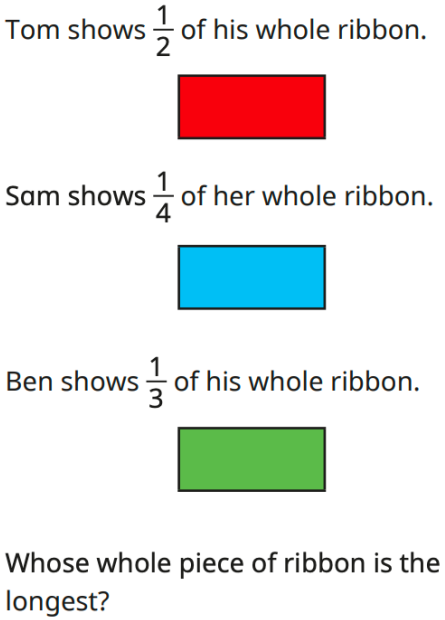
We can recognise half of a quantity, half of a length or half of a shape.

We recognise and write 1/3, ½, 2/4, ¾ and write simple fraction equations eg. ½ of 6 = 3.







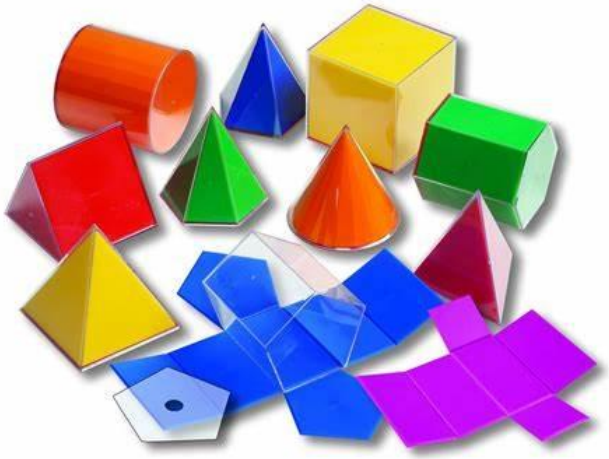


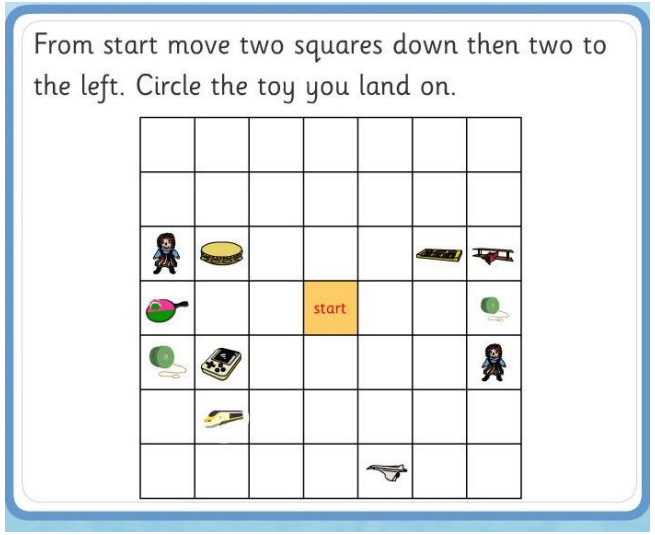
What else do we teach in Maths?

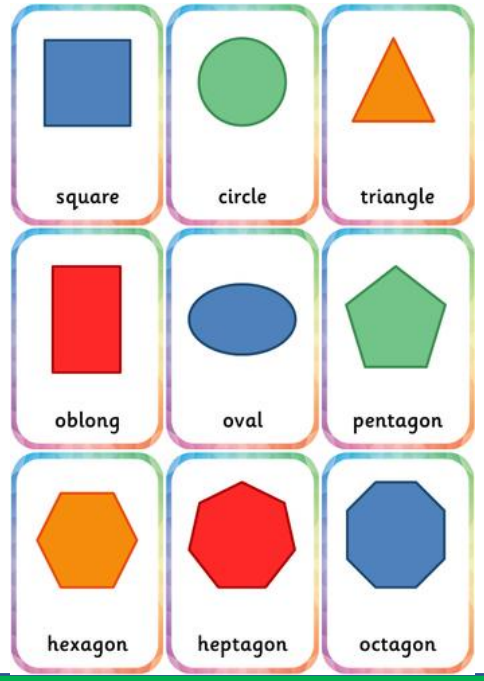
Shape & Position and Direction

We identify the properties of 2D and 3D shapes – sides, corners, edges, faces.
We identify the 2D shapes within 3D shapes.
We compare and sort common shapes.

We order and arrange objects in patterns and sequences.
We use mathematical language to describe position and directions.
We describe turns by applying rotations.



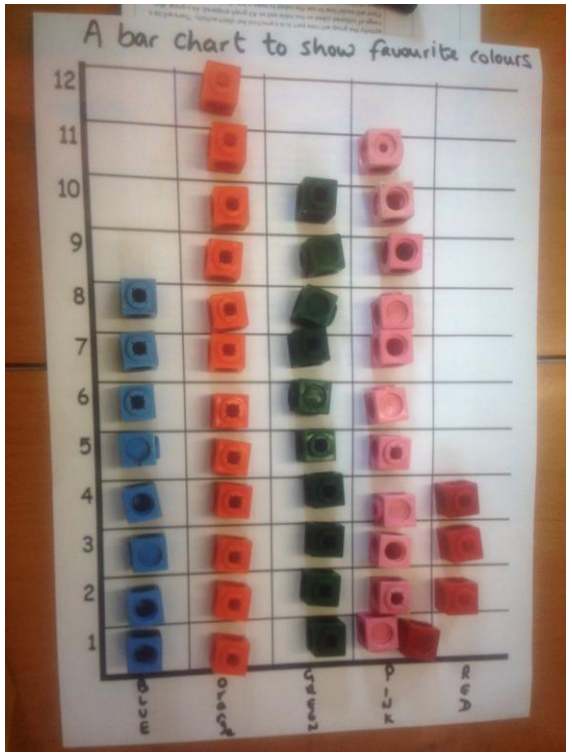




What else do we teach in Maths?

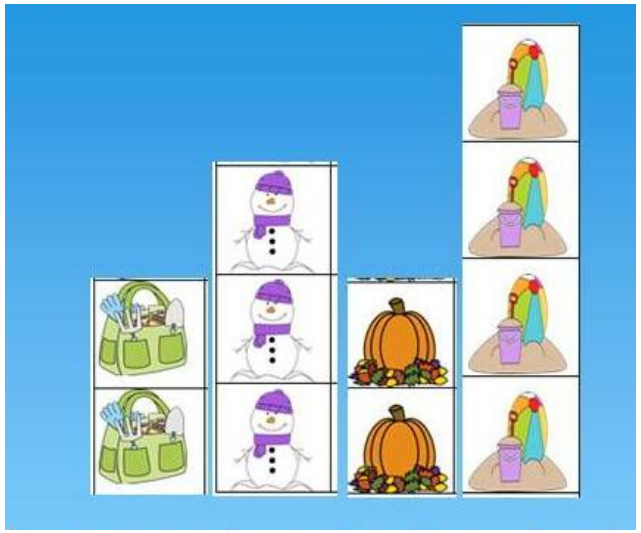
Statistics (Year 2)

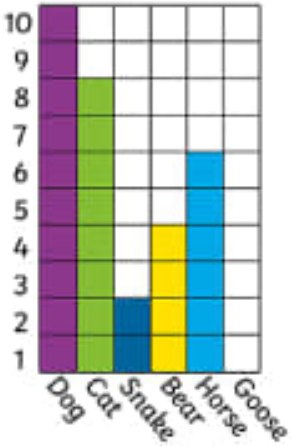
We interpret simple pictograms, tally charts and block diagrams. We ask and answer simple questions about these. We collage and compare information with simple ratios (2, 5, 10)



Favourite Lessons

Subject	Tally	Total
Maths	𝍸	4
English	𝍸	3
Science	𝍸	2
History	𝍸 𝍸	9
Other	𝍸	6





End of Year One Expectations:

Number	Addition and subtraction	Multiplication and division	Fractions	Measurement	Geometry
count to and across 100, forwards and backwards, from any given number.	read, write and interpret statements involving +, – =	Solve one – step problem involving multiplication	Recognise, find and name ½ of a shape, quantity and object.	Compare and solve problems involving measures.	Recognise and name common 2D shapes.
count, read and write numbers to 100.	represent and use number bonds 20.	Solve one – step problem involving division	Recognise, find and name ¼ of a shape, quantity and object.	Measure and begin to record lengths and heights.	Recognise and name common 3D shapes.
count in multiples of twos, fives and tens.	Show and use subtraction facts to 20.	Show multiplication using arrays	Solve simple ½ and ¼ problems.	Measure and begin to record mass/weight.	Describe the position, direction and movement of objects.
Identify one more and one less of a given number.	add and subtract one-digit and two-digit numbers to 20.	Count in twos, fives and tens.		Measure and begin to record time.	
read and write numbers from 1 to 20 in digits and words.	solve one-step problems that involve subtraction.			Tell the time to the hour and half past.	
	solve one-step problems that involve addition			Recognise and know the value of different coins and notes.	
				Recognise and use language relating to dates.	

Year 2 Maths

Year 2 Number and Place Value

Number and Place Value

Sufficient evidence shows the ability to:

- Count in steps of 2, 3, and 5 from 0, and in tens from any number, forward and backward.
- Recognise the place value of each digit in a two-digit number (tens, ones).
- Identify, represent and estimate numbers using different representations, including the number line.
- Compare and order numbers from 0 up to 100; use <, > and = signs.
- Read and write numbers to at least 100 in numerals and in words.
- Use place value and number facts to solve problems.

Addition and Subtraction

Sufficient evidence shows the ability to:

- Solve problems with addition and subtraction:
- using concrete objects and pictorial representations, including those involving numbers, quantities and measures applying their increasing knowledge of mental and written methods.
- Recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100.
- Add and subtract numbers using concrete objects, pictorial representations, and mentally, including: a two-digit number and ones, a two-digit number and tens, two two-digit numbers.
- Add three one-digit numbers.
- Show that addition of two numbers can be done in any order (commutative) and subtraction of one number from another cannot.
- Recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems.

Multiplication and Division

Sufficient evidence shows the ability to:

- Recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers.
- Calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication (×), division (÷) and equals (=) signs.
- Show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot.
- Solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts.

Fractions

Sufficient evidence shows the ability to:

- Recognise, find, name and write fractions 1/2, 1/3, 1/4, 2/4, 3/4 of a length, shape, set of objects or quantity.
- Write simple fractions for example, 1/2 of 6 = 3 and recognise the equivalence of 2/4 and ½.

Year 2 Geometry and Measures

Measures

Sufficient evidence shows the ability to:

- Choose and use appropriate standard units to estimate and measure length/height in any direction (m/cm); mass (kg/g); temperature (°C); capacity (litres/ml) to the nearest appropriate unit, using rulers, scales, thermometers and measuring vessels.
- Compare and order lengths, mass, volume/capacity and record the results using >, < and =.
- Recognise and use symbols for pounds (£) and pence (p); combine amounts to make a particular value
- Find different combinations of coins that equal the same amounts of money.
- Solve simple problems in a practical context involving addition and subtraction of money of the same unit, including giving change.
- Compare and sequence intervals of time.
- Tell and write the time to five minutes, including quarter past/to the hour and draw the hands on a clock face to show these times.
- Know the number of minutes in an hour and the number of hours in a day.

Geometry – Properties of Shapes

Sufficient evidence shows the ability to:

- Identify and describe the properties of 2-D shapes, including the number of sides and line symmetry in a vertical line.
- Identify and describe the properties of 3-D shapes, including the number of edges, vertices and faces.
- Identify 2-D shapes on the surface of 3-D shapes, [for example, a circle on a cylinder and a triangle on a pyramid].
- Compare and sort common 2-D and 3-D shapes and everyday objects.

Geometry – Position and Movement

Sufficient evidence shows the ability to:

- Order and arrange combinations of mathematical objects in patterns and sequences.
- Use mathematical vocabulary to describe position, direction and movement, including movement in a straight line and distinguishing between rotation as a turn and in terms of right angles for quarter, half and three-quarter turns (clockwise and anticlockwise).

Statistics

Sufficient evidence shows the ability to:

- Interpret and construct simple pictograms, tally charts, block diagrams and simple tables.
- Ask and answer simple questions by counting the number of objects in each category and sorting the categories by quantity.
- Ask and answer questions about totalling and comparing categorical data.

End of Year Two Expectations:

Ideas to support your child at home:

Counting opportunities to secure 1:1 correspondence.

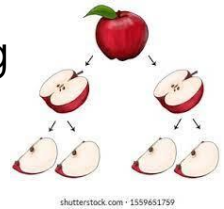
Finding number patterns.

Subitising when playing games with a dice or anywhere at home.

NUMBOTS

Telling the time on an analogue clock.

Exploring fractions when cutting pizza, cake, fruit.

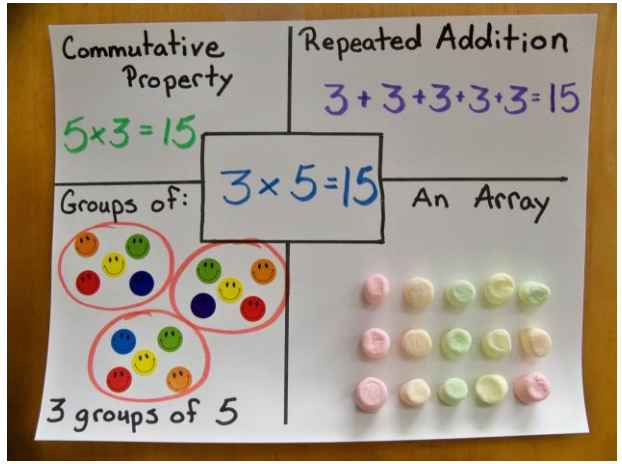


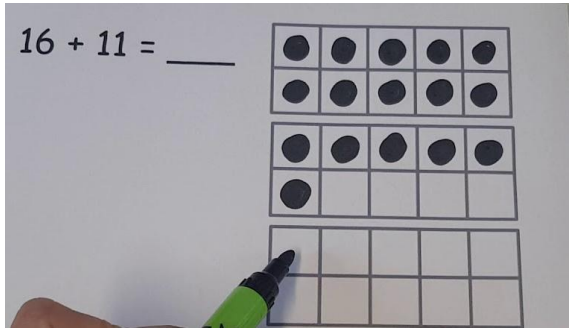
Practise exploring coins and working out the change.

Opportunities to weigh and measure when cooking!

Thank you


7
2
5
6
4
3
1


Commutative Property
5×3=15
Repeated Addition
3+3+3+3+3=15
3×5=15
Groups of:
An Array
3 groups of 5


16 + 11 = ___