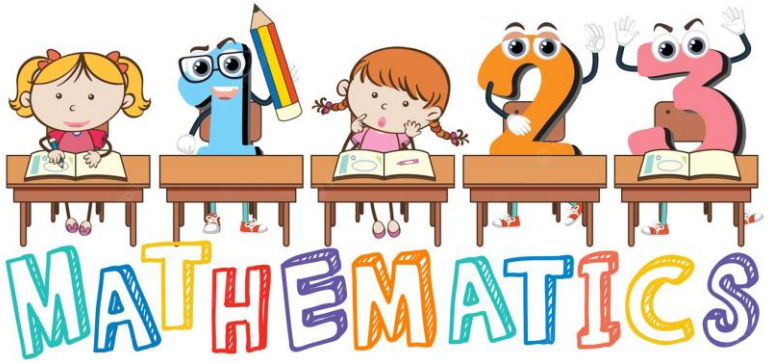
Spring Gardens Primary School

How to help your child with

Mastering Maths

- At Spring Gardens Primary School we aim for all children to gain a **deep understanding of maths**, which enables them to have a firm foundation to build on.
- The mathematical principles they learn in the early years, forms the basis of all future mathematical learning.
- It is important for the children to have a secure and long term understanding of the key principles.
- We believe that **everyone can do maths** and there is no such thing as a maths person. Maths is a subject that everyone can master!



End of year expectations

At the end of Reception most children are expected to have achieved the Early Learning Goals.
The Early Learning Goals for maths are as follows:

ELG Number

Children at the expected level of development will:

- Have a deep understanding of number to 10, including the composition of each number;
- Subitise (recognise quantities without counting) up to 5;
- Automatically recall (without reference to rhymes, counting or other aids) number bonds up to 5 (including subtraction facts) and some number bonds to 10, including double facts.

End of year expectations

ELG Numerical Patterns

Children at the expected level of development will:

- Verbally count beyond 20, recognising the pattern of the counting system;
- Compare quantities up to 10 in different contexts, recognising when one quantity is greater than, less than or the same as the other quantity;
- Explore and represent patterns within numbers up to 10, including evens and odds, double facts and how quantities can be distributed equally.

There are 6 important skills of mathematical learning

- **Counting and cardinality**

Being able to count and know that the cardinality of a number refers to the actual quantity of things it represents e.g. the "howmanyness" of a number.

- **Comparison**

Understanding that comparing numbers involves knowing which numbers are worth more or less than each other.

- **Composition**

Understanding that numbers can be composed from 2 or more smaller numbers.

Pattern

Looking for and finding patterns helps children notice and understand mathematical relationships.

Shape and Space

Knowing about and talking about the properties of shapes and understanding what happens when shapes move or combine with each other helps develop wider mathematical thinking.

Measures

Comparing different aspects such as length (long and short), weight (heavy and light) and volume (full, empty) are required to understand units of measure later e.g. centimetres, or kilograms

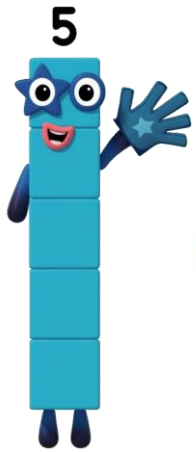
Fluency in Number

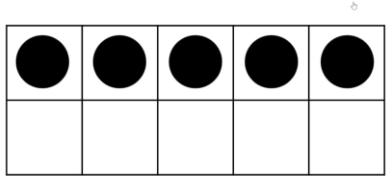
In Reception, we aim to develop a deep understanding of number.

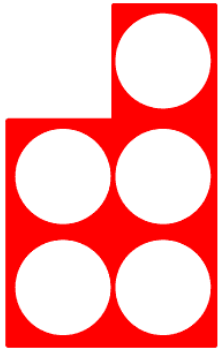
Representing numbers

We want all children to understand the number, rather than just recognise the numeral. Children need to understand that numbers can be represented in many ways, not just as a written number.

We use many different objects and representations to show that numbers can be presented in different ways.







Counting

When counting children need to understand...

- That we need to say one number for each object (touch counting).

- The final number we say represents how many there is. Some children continue to count after they have reached the final object as they don't connect the numbers they are saying to the objects in front of them.

- That we can count objects in any order and the total stays the same.

Recognising amounts - Subitising

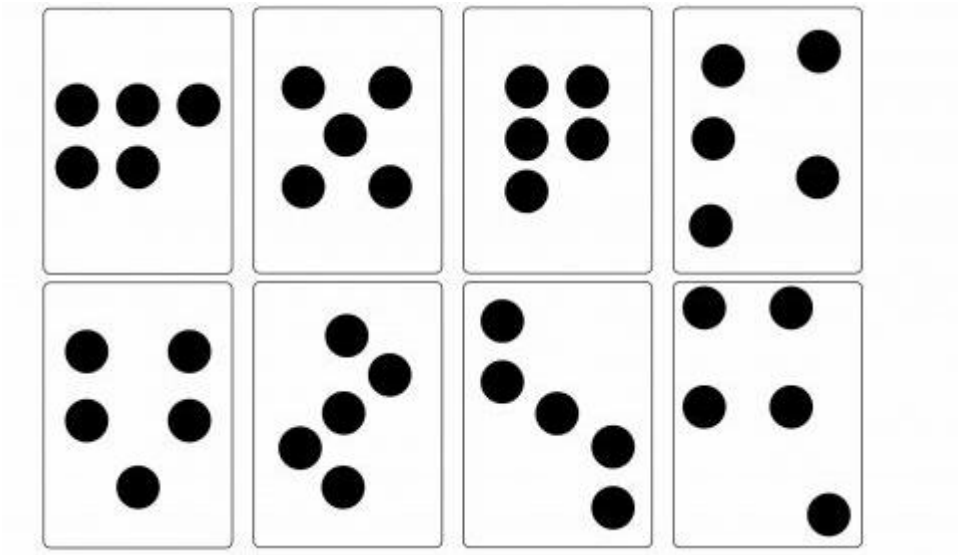
- One skill that is very important is being able to recognise amounts without counting them.
- Initially children will learn to recognise common representations e.g. dice patterns, but as they progress they will be taught to look for groups within arrangements.

Are these all 5?

How do you know?

What do you see?

Can you explain how you know?



Have a go at subitising. How many do you see?

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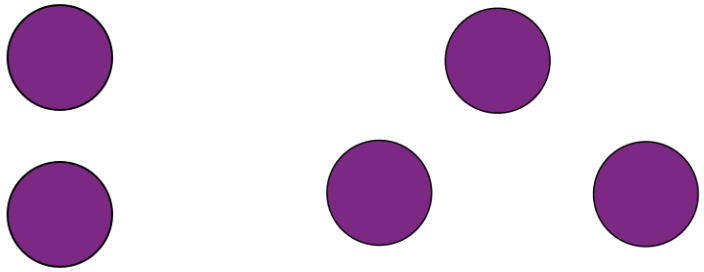
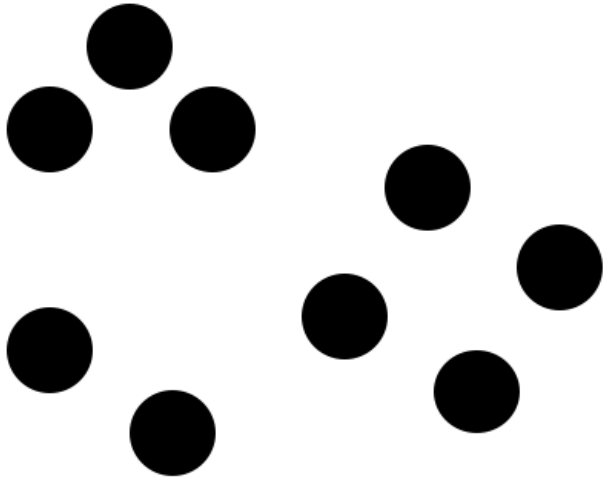
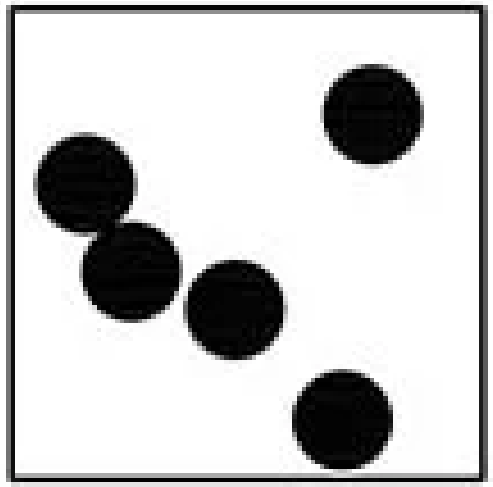




Have a go at subitising. How many do you see?

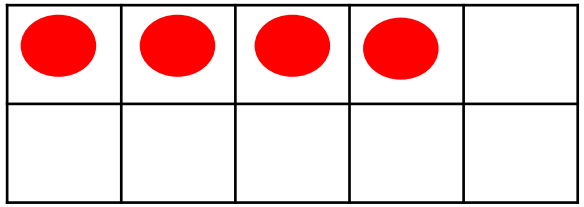


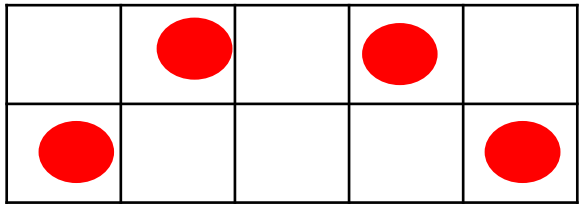
Have a go at subitising. How many do you see?

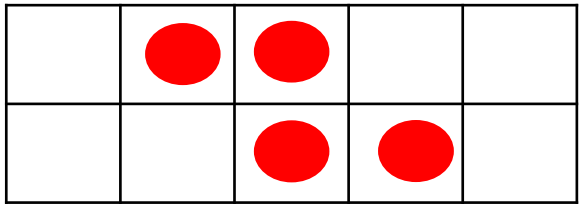
Understanding the total stays the same even when the objects move.

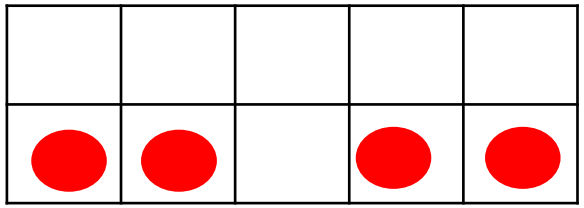
When children first start to use numbers, they often do not understand that if we move objects into another arrangement the total stays the same.

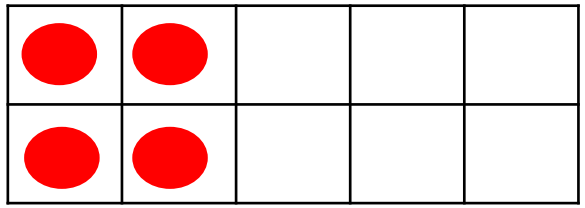
We practise this with many different types of objects but a useful tool is a ten frame, which can be used to move counters around.









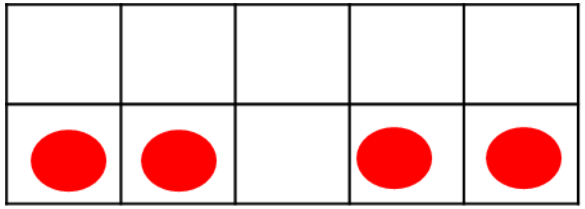


Reasoning

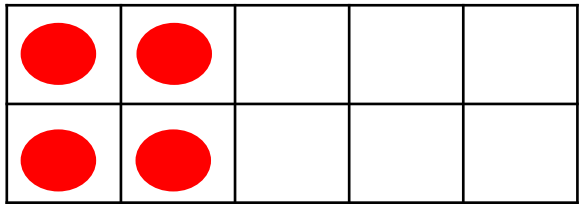
Reasoning in maths helps children to be able to explain their thinking.

This makes it easier for them to understand what is happening in the maths that they are actually doing.

Throughout all our lessons children are encouraged to talk about what they see and explain their thinking.



How do you know that this is four?



Is this still 4? Explain how you know.

Oral Counting

Oral counting: saying number names in order.

Children need to be able to

- Count from 1 (to 10, to 20)
- Count from different numbers (e.g. From 3 to 9)
- Count backwards as well as forwards

Practise at home

- Count at different speeds
- Count in a silly voice, whisper/shout the numbers
- Sing counting songs
- Count things you do every day e.g. going up the stairs

What do children find difficult?

- Counting from numbers other than one
- Counting backwards
- Crossing tens boundaries (e.g. 27, 28, 29, 30, 31)

Listen really carefully

Children often confuse numbers such as fourteen and forty. This means they might say, e.g. nine, ten, eleven, twelve, thirty, forty, fifty, sixty...

It is important that children pronounce the teen numbers accurately

Four**teen**, fif**teen** etc.

Comparing Numbers

Children need to learn how numbers compare with each other.

Which of these groups has more?

Which one has fewer?

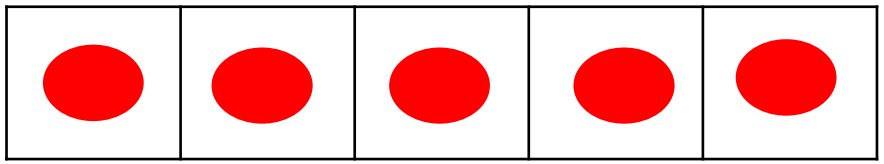
What is one more than five?

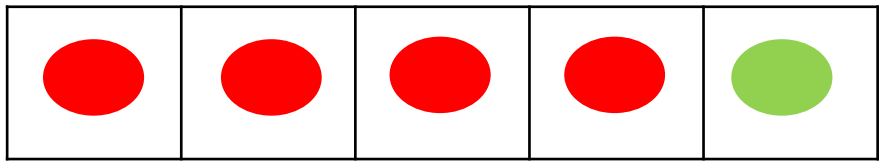
What is one less than 9?

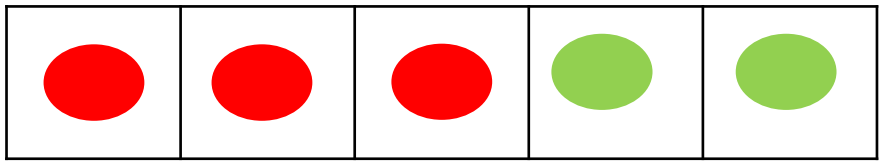
Composition of Numbers / Number Bonds

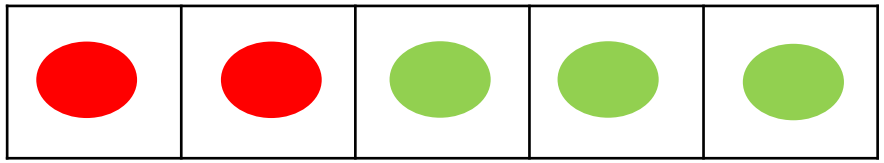
This is an extremely important skill that underpins a lot of future learning.

How can we make 5?









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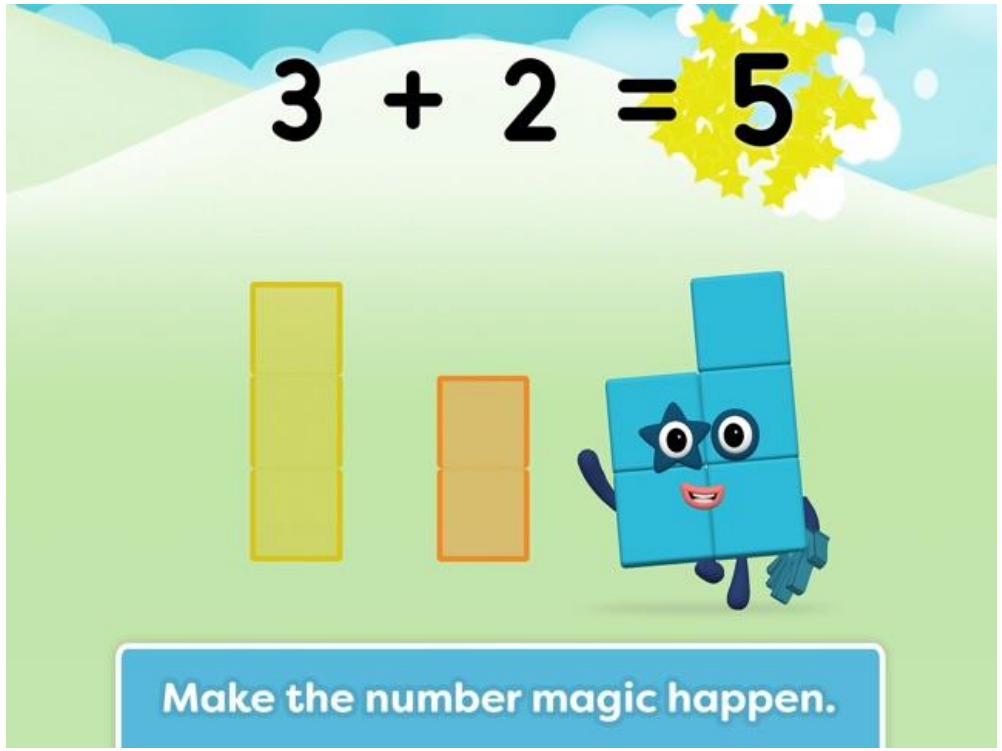
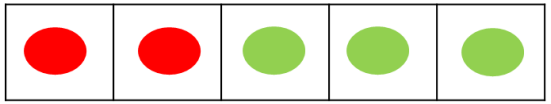
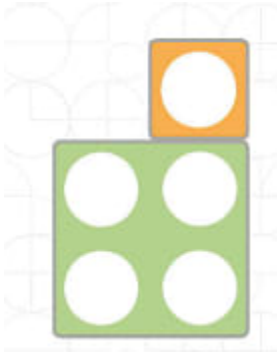
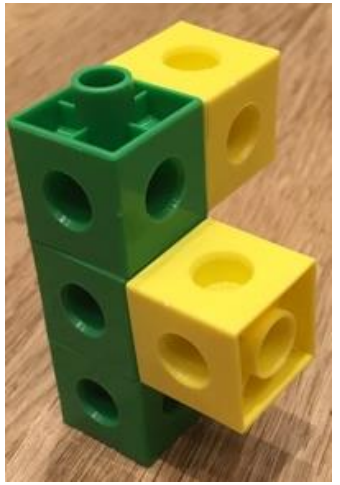


Children **do not** need to know the written number sum.

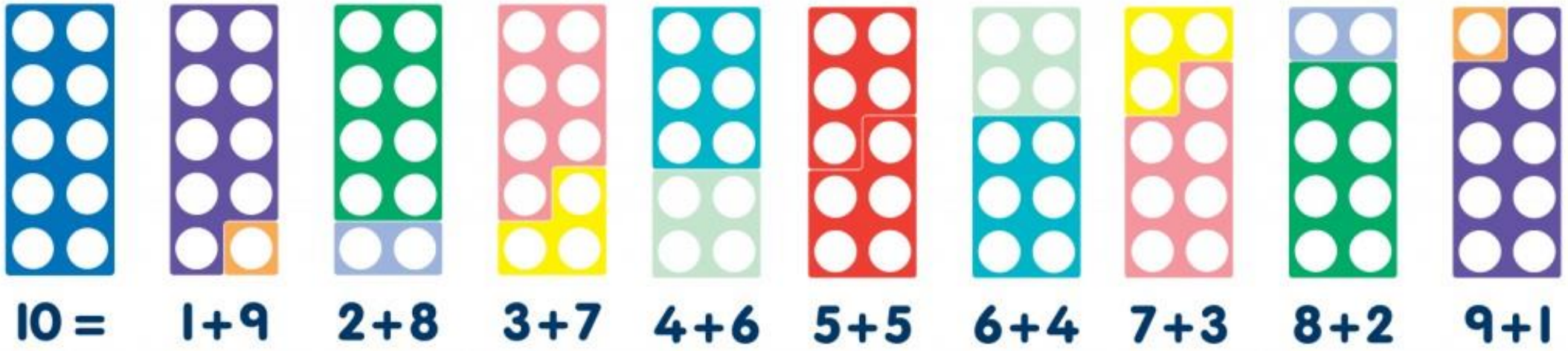
They do need lots and lots of practise making 5 with lots of different resources.





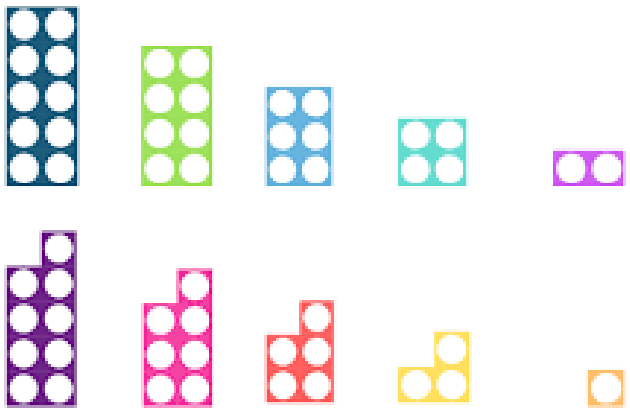


Visual Representation of Number Bonds to 10



patterns

- Number patterns e.g. 1 2 12 1 2 1 2
- Shape / colour patterns
- Doubles
- Odd and even patterns



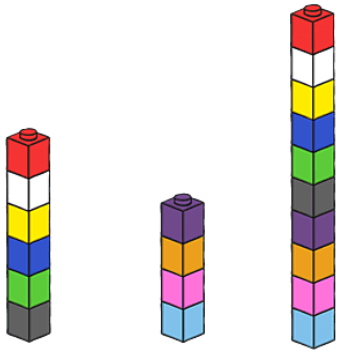
What do you notice?

Why could this be?

Measures

- Which is longest? Which is shortest?

- Can you order these from shortest to tallest?



- Which one is full? Which one is half full? Which on is empty?

- Which is heavier / lighter? How do you know?

Helping at home

- Count – steps, objects, pennies into a purse / money box.
- Ask children to say how many they can see without counting (up to 5).
- Play games using dice and dominoes and encourage children to recognise the spots without counting.
- Ask children to set the table and count the knives, forks etc. Is there enogh for everyone? Do you need one more?
- Spot numbers in the environment e.g. on doors, car registrations, clocks, phones, remote controls.
- Ask children to draw representations of numbers e.g. 4 wheels on a car, 4 legs on a dog, 5 fingers on a hand.

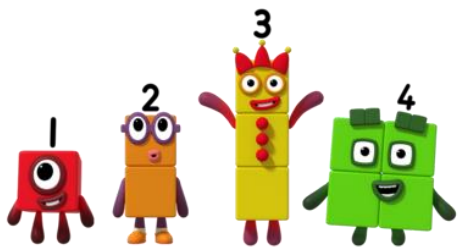
Helping at home

- Play maths games outside e.g. skittles, hopscotch.

- Read books with mathematical concepts e.g. The Very Hungry Caterpillar, What's the time Mr Wolf? The Doorbell Rang.

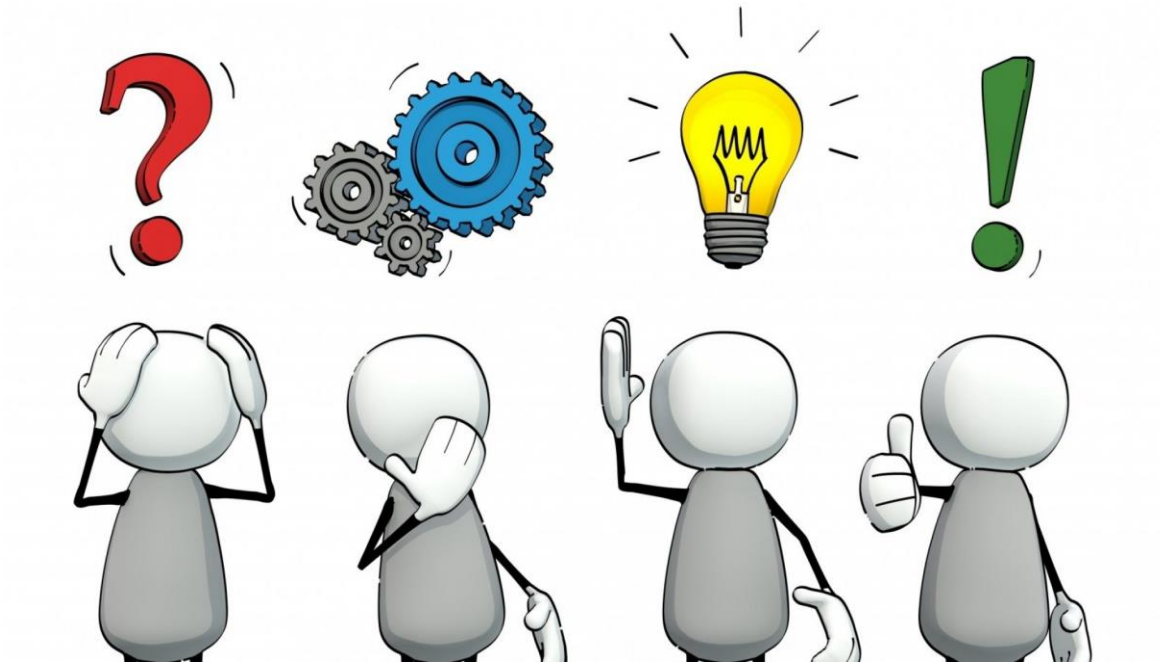
- Compare groups. Who has got more sweets? Who has fewer sweets?

- Watch number blocks on Cbeebies. This programme is written by maths specialists to model maths concepts and representations of number. We include these videos in our teaching at school.



Mastering Maths

- A useful analogy



What is mastery?

How do you know when a child has mastered something?

When a young child is learning to walk, we would not say they have mastered walking when they take their first wobbly step. We would say 'mastery of walking' is when they can do it forwards, backwards, uphill, when tired, around objects, on different surfaces and holding someone's hand. It is the same when mastering an aspect of mathematics. A child has mastered counting to ten when they have a deep understanding of the numbers to ten. This means that they understand the sequence (order), quantities, properties and relationships between numbers 0-10, and they can play around with these and use them in different contexts. It takes time to develop depth of understanding and it is important that children are provided with the time and resources to explore and enjoy number.

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