Family Maths Toolkit

Singapore Maths: A Guide for Parents

What is Singapore Maths?

Singapore Maths has received a lot of coverage in the media and many schools are adopting it as a way of teaching maths. It is an *approach* to teaching, rather than a new aspect of the national curriculum, which aims to develop **mastery in maths** for all pupils.

The maths mastery approach

The **mastery approach** to maths focuses on **whole-class teaching** and developing a **deep understanding**. All pupils are encouraged to believe that, through their own efforts, they can succeed.

Teaching for Mastery can be summarised with a few key principles:

- High expectations for every child
- Fewer topics covered in greater depth
- Number sense and place value are priorities
- Problem solving is central to all learning
- Challenge is provided through increased depth, rather than acceleration of content

Maths Mastery lessons provide opportunities for pupils to communicate and develop mathematical language through:

- Sharing essential vocabulary at the beginning of every lesson, teachers model its use and expect pupils to use it with increasing accuracy
- Teachers modelling clear sentences to develop understanding
- Plenaries (discussions rounding off the lesson) give further opportunities to practise using vocabulary and for the teacher to assess understanding through the pupils' explanations

It is important to recognise that teaching for mastery includes a focus on attitudes towards maths, such as:

- Beliefs about maths and its value
- Interest and enjoyment in learning
- Appreciation of the power and beauty of maths
- Confidence in using maths
- Perseverance in solving problems

Why are many UK schools adopting it as an approach to teaching maths?

South Asian schools are consistently top of international test rankings and recognised for their academic ability. An exchange programme, whereby English teachers spent some time observing maths lessons in Shanghai schools, inspired UK schools to adopt this different approach.

However, the maths mastery approach has been around longer than you might think. It has roots in the maths teaching of the 1980s and the ideas of Jerome Bruner.

What does a lesson look like?

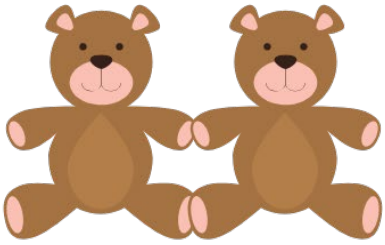
A typical maths mastery lesson is led by the teacher, with all the pupils in the class working together on the same learning objective at the same time.

The structure of the lesson is built around three key concepts: **concrete, pictorial,** and **abstract** which help children develop their understanding before starting to work on their **reasoning and problem solving.**

Concrete:

Children use real objects and pictures to represent mathematical concepts.

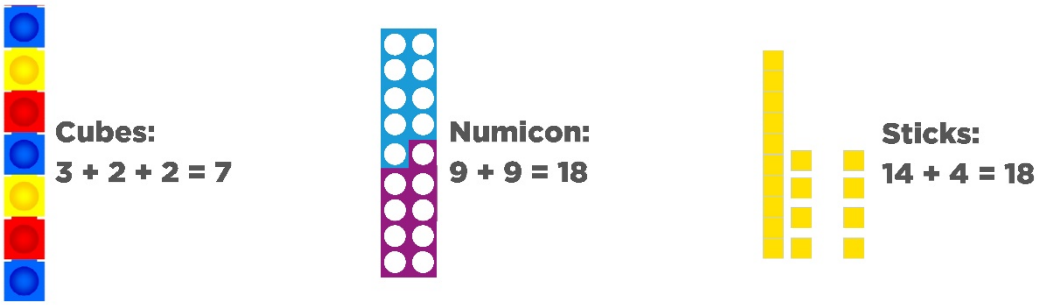
For example, this could be 5 real teddies or a picture of 5 teddies:



They could be used to develop '3 teddies and 2 more make 5 altogether' or '5 teddies take away 2 would leave 3 teddies'. The child could move them around in order to accurately count and begin to understand addition and subtraction.

Pictorial:

The next step is to **represent** these. This could be using mathematical apparatus to replace real objects, such as:



They can also be represented using a bar model, for example:

Here it is possible to visualise the fact that 16 + 4 = 20 or 20 – 16 = 4.

You can find out more about bar modelling HERE.

This helps them to visualise **abstract** ideas and, as they increase in understanding and confidence, these 'props' will become unnecessary

Abstract:
Finally – *when understanding is secure* – pupils are able to work abstractly with numbers on paper.

Reasoning and problem solving:
Once they understand these concepts, pupils are encouraged to **reason** and **problem solve**.

For example:

My foot is 19cm long. My friend's foot is 14cm long. Calculate the difference between the lengths.

Sometimes, the order may be mixed so that pupils work with an abstract calculation and are asked to represent it pictorially to demonstrate their understanding.

Some seven-year-olds are working on this problem: three cars, three bicycles and two lorries go past the school gate. How many wheels went by?

Pupils would be expected to draw out the vehicles and wheels, and debate together, to help them solve this problem.

It is the link between real-life maths and abstract calculations which is developed in smaller steps to build the understanding progressively and securely.

Meeting your child's needs

If your child struggles with maths, you may be concerned that they might struggle to keep up with whole-class teaching.

The mastery approach takes more time to build understanding of a concept – each step of the lesson is planned to build precisely on the last, and children are guided appropriately. Those children who have not met the expected outcomes or have gaps in their understanding, may be helped by receiving short, extra time on maths later in the day.

Those who grasp ideas more quickly are also catered for and are encouraged to deepen their understanding of the principles – they will be asked challenging questions requiring them to reason and demonstrate their knowledge.

Mastery is about keeping children together and ensuring success in mathematics is possible for every child and this is an important foundation for the whole approach.

How you can support your child at home

Children are expected to learn key maths facts, like times tables and addition facts, by heart – these can be easily supported by home practice.

Maths is an everyday skill and is all around us. It can happen anywhere and problem solving is a life skill. Look for problems you can talk about and solve together; make connections between what your child has learnt at school and the world around them.

Ideas for how to support your child's maths learning at home

Download our Singapore Maths Glossary