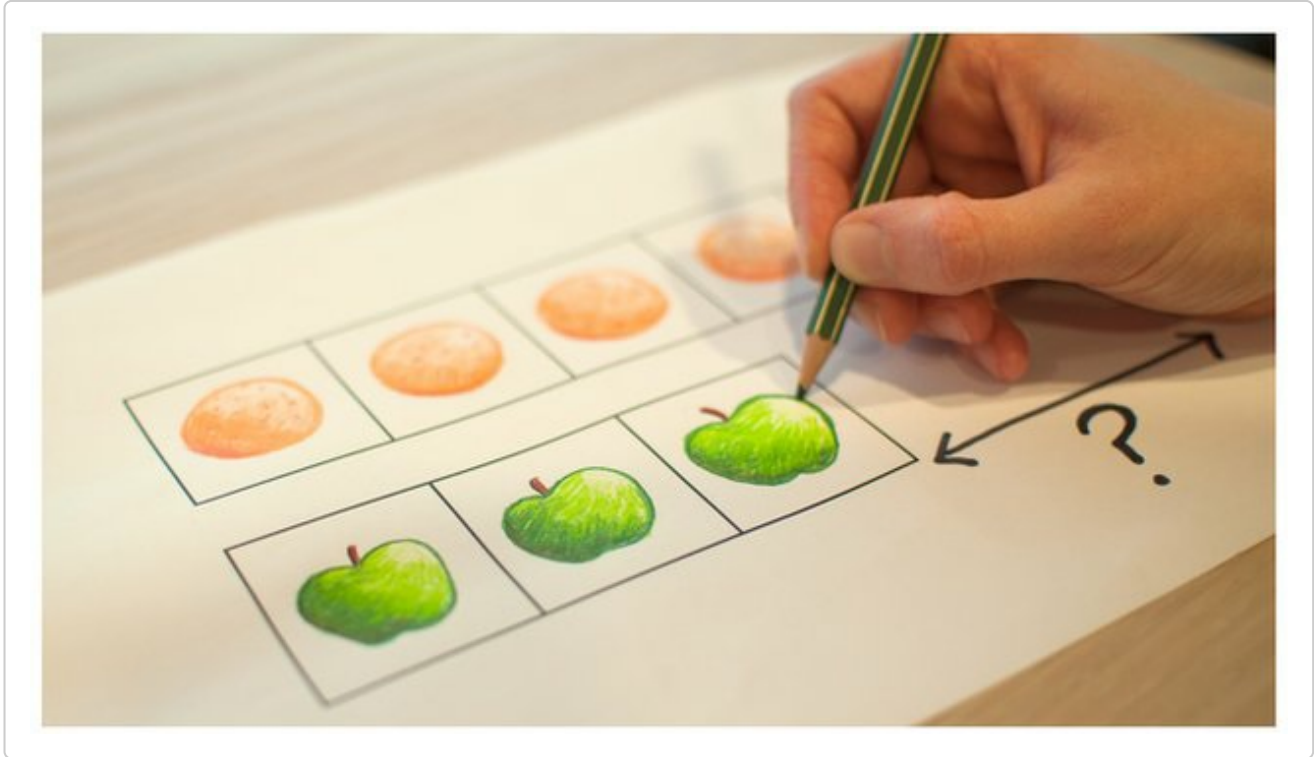


Can the Singapore method help your children learn maths?

[web.archive.org/web/20190109135828/http://www.bbc.co.uk/skillswise/0/24925787](http://www.web.archive.org/web/20190109135828/http://www.bbc.co.uk/skillswise/0/24925787)

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Singapore teaches maths better than most countries including the UK, according to international rankings for secondary pupils.

The difference starts at an early age.

There are many reasons but one key factor is its step-by-step approach that can be used at home or in the classroom.

Young children are happy playing with blocks or drawing pictures. But they can find number symbols, like $5 + 2 = 7$, mystifying.

So the Singapore method begins by allowing children to start learning about maths by playing with real objects, blocks or cut-out pictures.

They build confidence with the basic ideas of adding and taking away. There is then a second stage of drawing pictures representing the objects. And only later do they gradually start to add numbers to their drawings.

Maths without symbols?

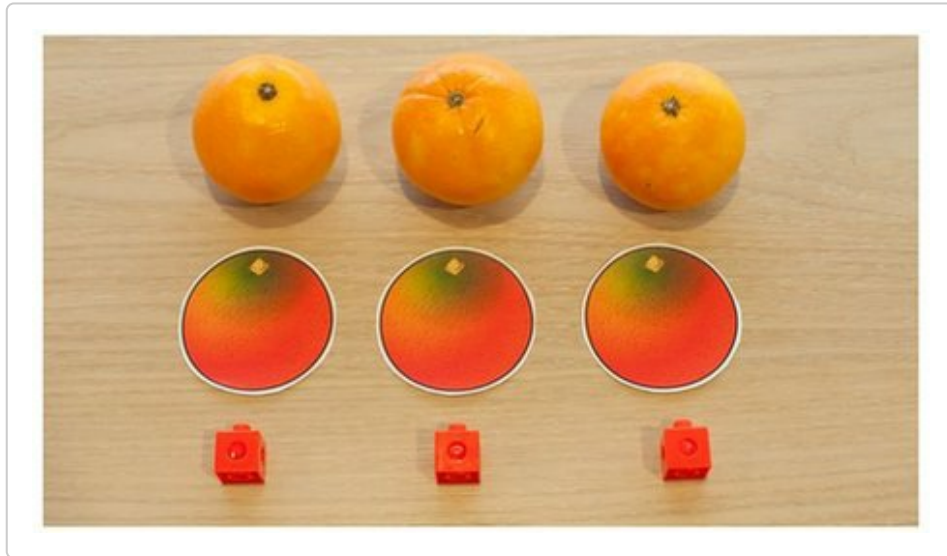


In education systems in the UK, pre-school children are often introduced to maths and to number symbols at the same time. For instance through brightly-coloured counting books which show a picture of an apple - or a kite or a butterfly - next to a '1'. Two new things next to a '2'. Three new things next to a '3'. Culminating in a loose group of ten things next to a '10'.

But number symbols like 5 or 10 as well as symbols like + or - are often difficult for children to understand. And if they are introduced too quickly, there is a risk that young children will struggle and from then on never fully recover their confidence in maths. Failing repeated tests on symbolic sums at school only deepens their anxiety and they soon learn that maths is not for them.

The Singapore method illustrated in more detail below goes more gradually - from handling "concrete" things, to drawing one-to-one "pictorial" iconic representations of them, to eventually understanding and using the mysterious "abstract" symbols with confidence.

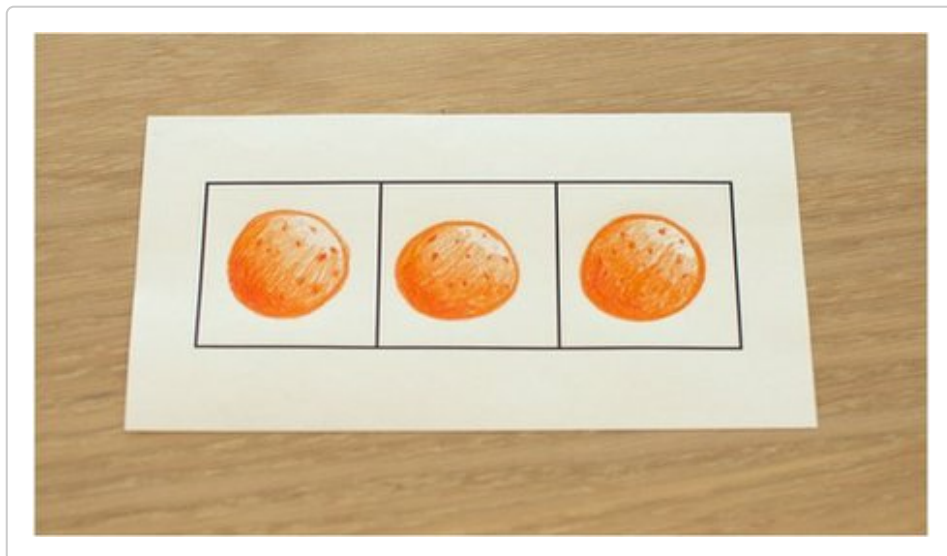
1. Lining up objects in a row



Children start by counting familiar things using blocks or cut-out pictures they can physically line up in a row. For instance counting pieces of fruit, their own ages, or people in the room. With one block or cut-out picture for each orange, or year, or person.

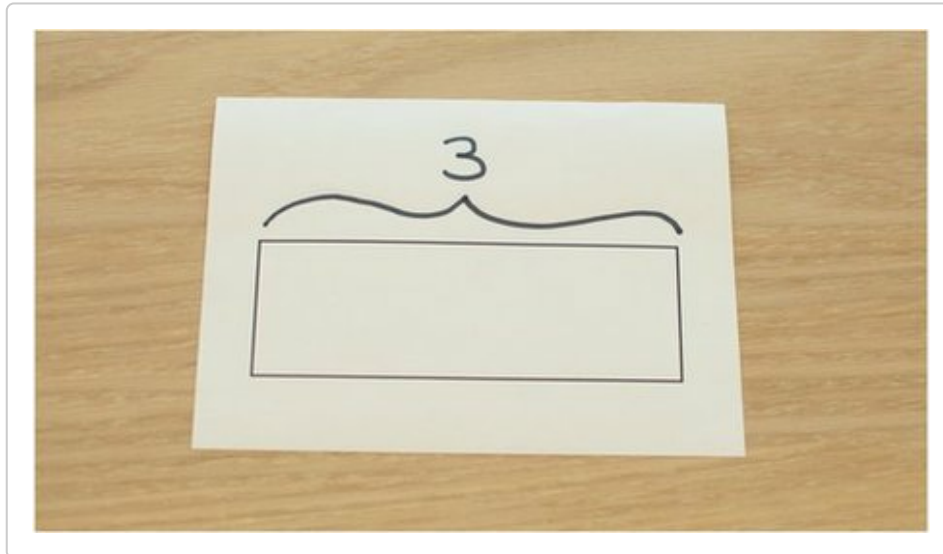
They can learn most basic maths concepts with these objects. For instance add objects to the row, or take them away, to understand adding and subtraction. Or split a row in the middle to understand halving.

2. Drawing boxes around pictures



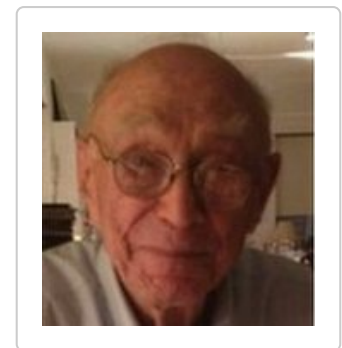
Then children start to draw pictures on paper of the things they are counting, with a box around each picture. So there's one box for each thing they are counting. Over time they drop the pictures and just draw the boxes.

3. Labelling the boxes



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- In the 1960s American psychologist Jerome Bruner (above) put forward a theory that people learn in three basic stages: by handling real objects, through pictures, and through symbols.
- Bruner said symbols are "clearly the most mysterious of the three."
- In the 1980s Singapore developed its model method based on Bruner's theory.



Gradually, once they are confident with drawing boxes to count objects, children start to write the number of boxes as a figure above the drawing.

Eventually they no longer need to draw all the boxes. They just draw one long box or bar and label it with the number. This step away from one-to-one representations to symbols is crucial and it may take a year or more for some children to become confident with it. But the benefits later on are worth it.

The Singapore Model Method

This model of numbers as labelled bars is known as the Singapore model, and it's a tool children can use to understand almost any concept in maths, including multiplication and division and even algebra.

Professor Lianghuo Fan, former editor-in-chief of Singapore's maths textbooks, has researched the reasons for Singapore's success in maths. As he puts it: "People have different views about the reasons for Singapore students' performance, but one thing that is universally agreed is that the Singapore model method is key."

You can see examples of different stages of the model in this slideshow:

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Imagine you have five oranges and three apples, how many more oranges than apples?

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10 top tips for trying the Singapore model method with your kids:

Count things with objects

Try counting familiar things together like the number of people in the room, kids' ages, or goals in football matches, using concrete objects like counters, buttons or small stones, lining them up one by one. If nothing's to hand use fingers.

Get some interlocking cubes

Interlocking cubes are great and can be bought for a few pounds, or your child's nursery or school may be able to lend you some. Try carrying round a few to count things when you're out and about. They are also good for kids to play with to keep them occupied.

Use cut-out pictures

Draw pictures on paper and cut them out to use as counters with your kids. Or print out our handy [Singapore model cut-out pictures](#) and use them at home with your kids, to count people, ages, goals, coins or fruit.

Do basic arithmetic with objects

You can talk about most basic arithmetic using concrete objects, adding objects to the line, taking them away. 'Multiply' literally means 'many layers' and you can show times tables by layering rows one on top of the other.

Use interactive blocks

If you have an iPhone or Android mobile why not try BBC Skillswise's interactive blocks: **text SKILLSWISE to 81010** or if you are reading this on your mobile device [preview the interactive times tables blocks](#). *Please note texts to the BBC cost 12-15p, interactive not compatible with all phones.*

Draw pictures

Give kids pens and paper to draw things they count, lined up in a row. Encourage them to draw boxes around the pictures. The fact they have drawn the pictures gives them a sense of ownership and means they'll probably be more confident in talking about them.

Don't rush to use figures

Hold off from using number symbols until your child is really confident with concrete and pictorial representations and can make the link. So they will always have a ready way of picturing what the symbol means as a fall-back.

Start with figures 1 to 9

When you do start using symbols to label drawn boxes, stick to 1 to 9 at first to build confidence, so one figure relates to one quantity. The leap from the figure 9 to the figure 10 involves concepts of place value and zero which can take time to understand.

Brush up your own maths to help your kids

Most of us feel a bit rusty with maths, especially the new methods used in schools these days. Why not be a learning role model to your kids by joining a local maths class for adults? You can find out about free local courses from the [National Careers Service](#) as well as family learning centres near you on the [Sure Start website](#). Or brush up your maths skills online with maths websites for adults like [BBC Skillswise](#).

Go slowly to build confidence

It takes time for children to get really confident with the basics. The Singapore curriculum actually covers less than the UK national curriculum in the first few years, instead taking more time to build confidence in the basics. But this pays off in spades later on.

TOP TIP: Be positive

Above all be positive. Enjoy playing with and counting objects together, celebrate effort and praise often. Real learning involves making lots of mistakes. Try to see mistakes as positive things that highlight deeper misunderstandings. Why did I think that? Kids have years of maths lessons ahead of them and every ounce of self-confidence helps them to succeed. Boosting children's understanding with objects and pictures is key.