

An Introduction to Maths No Problem

**Parent Meeting
2018**

Outline of meeting

- Presentation outlining our approach to maths
– Maths No Problem. (30 mins)
- Year Group Station MNP lesson and how to help your child.
- Questions & exploration of resources (10mins)

Aims of presentation

- Why we use Maths No Problem?
- Key principles
- What does a lesson look like?
- Importance of concrete equipment and visual models:
 - ten-frames
 - number bonds models
 - bar modelling

Singapore Education

Singapore hasn't always had great Maths performance.

It was ranked 16th out of the 26 countries participating in the 1983 SIS study.

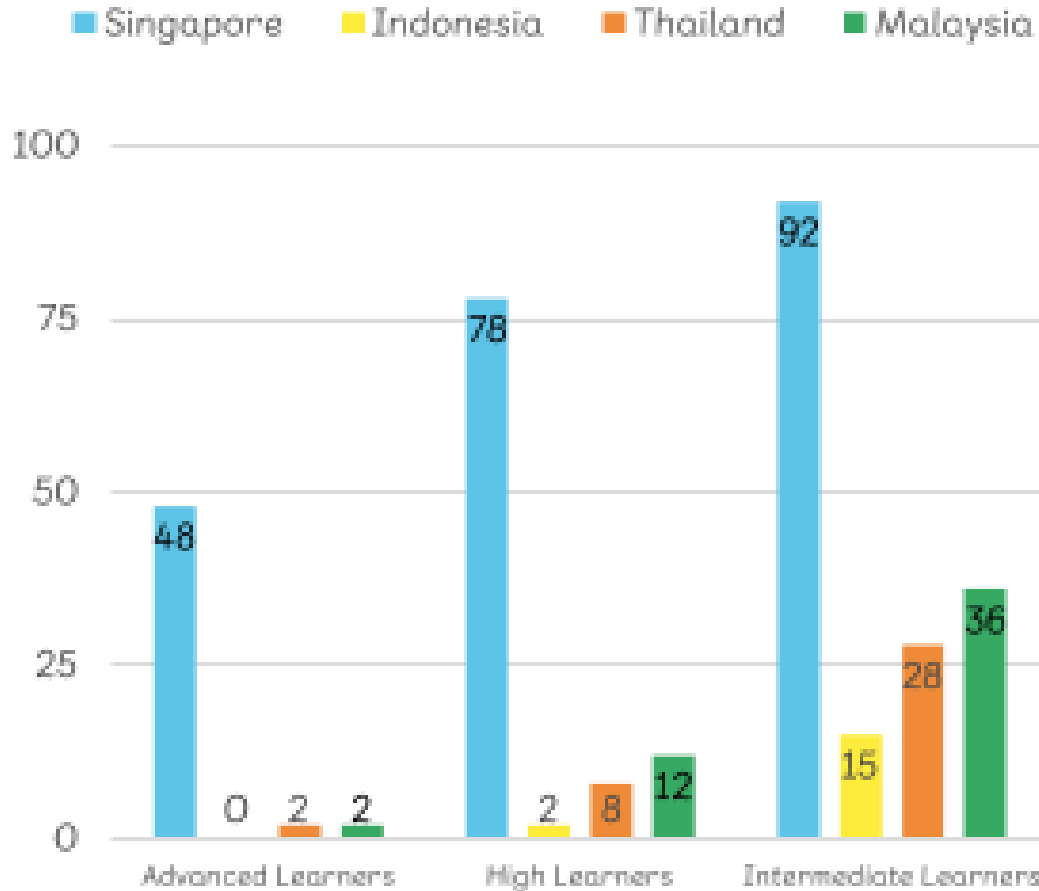
The government recognised this was not good enough for an economy entirely dependent on its human resources, so they started examining leading teaching concepts in the early 1980s.

Setting the scene



MATHS 
NO PROBLEM!

TIMSS Benchmark 2011



Grade 8 is the same age as UK Year 9

Singapore used to be part of Malaysia and previous to changing how they teach in the 1980s their results were identical to Malaysia.

National Curriculum 2014:

Aims

The national curriculum for mathematics aims to ensure that all pupils:

- become **fluent** in the fundamentals of mathematics, including through varied and frequent practice with increasingly complex problems over time, so that pupils develop conceptual understanding and the ability to recall and apply knowledge rapidly and accurately
- **reason** mathematically by following a line of enquiry, conjecturing relationships and generalisations, and developing an argument, justification or proof using mathematical language
- can **solve problems** by applying their mathematics to a variety of routine and non-routine problems with increasing sophistication, including breaking down problems into a series of simpler steps and persevering in seeking solutions

Differentiation

Enrichment and higher-level thinking

Taking a mastery approach, differentiation occurs in the **support and intervention** provided to different pupils, **not in the topics taught**, particularly at earlier stages. There is **no differentiation in content taught**, but the **questioning and scaffolding** individual pupils receive in class as they work through problems will differ, with **higher attainers challenged through more demanding problems** which deepen their knowledge of the same content. **Pupils' difficulties and misconceptions are identified through immediate formative assessment** and addressed with **rapid intervention** – commonly through individual or small group support later the same day: there are very few “closing the gap” strategies, because there are very few gaps to close.

- **Extension through developing reasoning skills and tackling unfamiliar problems.**
- **Support through use of concrete equipment and visual models**

Working with pupils core competencies

Problem solving is at the heart of mathematics

The focus is *not* on rote procedures, rote memorisation or tedious calculation but on relational understanding.

Pupils are encouraged to solve problems working with their core competencies, in particular:

- 1 Visualisation
- 2 Generalisation
- 3 Make decisions





What does a lesson look like?

Can you draw out what you did?

Show me what that looks like using your equipment.

How lessons are taught

Concepts merge from one chapter to the next. Chapters are broken down into chunks called lessons.

Lessons typically are broken into three parts and can last one or more days.

Pupils master topics before moving on.



The three parts to a lesson are:

- 1 Anchor task — the entire class spends a long time on one question guided by the teacher
- 2 Guided practice — practice new ideas in groups guided by the teacher
- 3 Independent practice — practice on your own

Adding with Renaming

Lesson 3

In Focus

5608 tickets for a charity concert were sold before the day of the concert.
On the day of the concert, another 1235 tickets were sold.

How can we find the total number of concert tickets sold?

Adding with Renaming

Lesson 3

In Focus

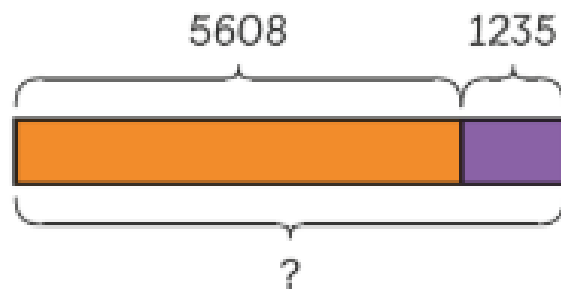
5608 tickets for a charity concert were sold before the day of the concert. On the day of the concert, another 1235 tickets were sold.

How can we find the total number of concert tickets sold?

HOW CAN WE FIND

In Focus

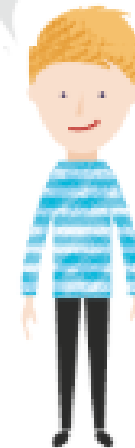
5608 tickets for a charity concert were sold before the day of the concert. On the day of the concert, another 1235 tickets were sold.



How can we find the total number of concert tickets sold?

Let's estimate.

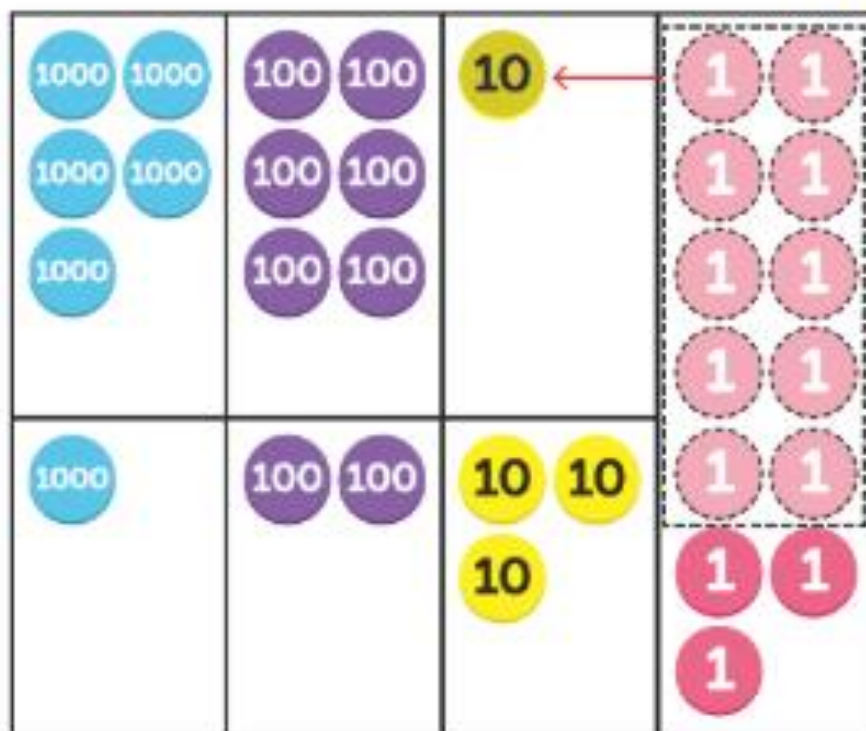
$$\begin{array}{r} 5600 \\ + 1200 \\ \hline 6800 \end{array}$$



Let's Learn

1 Find the sum of 5608 and 1235.

Step 1 Add the ones. 8 ones + 5 ones = 13 ones
 Rename the ones. 13 ones = 1 ten and 3 ones



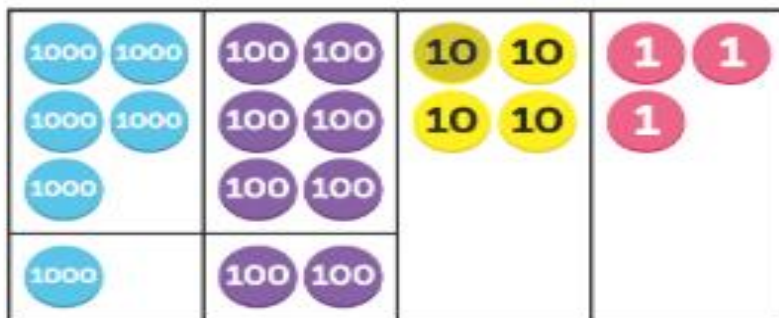
$$\begin{array}{r}
 5 \quad 6 \quad 0 \quad 8 \\
 + 1 \quad 2 \quad 3 \quad 5 \\
 \hline
 \quad 3 \\
 \hline
 \end{array}$$



Step 2

Add the tens.

$$0 \text{ tens} + 3 \text{ tens} + 1 \text{ ten} = 4 \text{ tens}$$

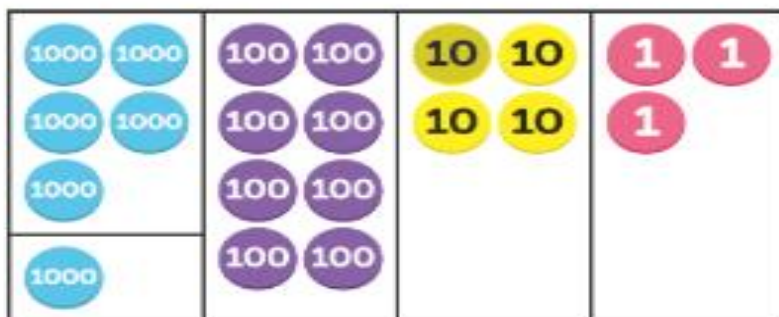


$$\begin{array}{r} 5 \quad 6 \quad 0 \quad 8 \\ + 1 \quad 2 \quad 3 \quad 5 \\ \hline \quad \quad 4 \quad 3 \end{array}$$

Step 3

Add the hundreds.

$$6 \text{ hundreds} + 2 \text{ hundreds} = 8 \text{ hundreds}$$

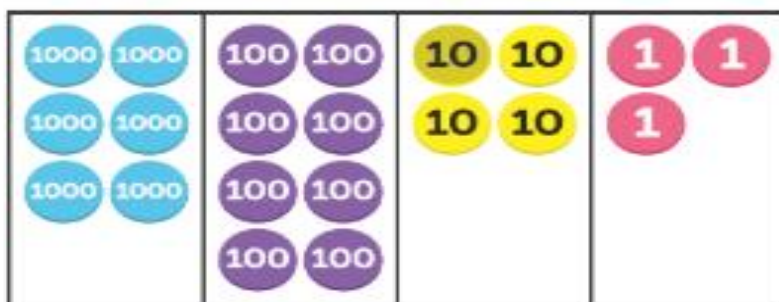


$$\begin{array}{r} 5 \quad 6 \quad 0 \quad 8 \\ + 1 \quad 2 \quad 3 \quad 5 \\ \hline \quad 8 \quad 4 \quad 3 \end{array}$$

Step 4

Add the thousands.





$$5 \text{ thousands} + 1 \text{ thousand} = 6 \text{ thousands}$$



$$\begin{array}{r} 5 \quad 6 \quad 0 \quad 8 \\ + 1 \quad 2 \quad 3 \quad 5 \\ \hline 6 \quad 8 \quad 4 \quad 3 \end{array}$$

2

Add 5608 and 1235.

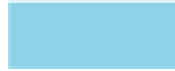
	5	6	0	8	
+	1	2	3	5	
<hr/>					
			1	3	add ones
			3	0	add tens
		8	0	0	add hundreds
+	6	0	0	0	add thousands
<hr/>					
					
<hr/>					

$5608 + 1235 =$ 

Guided Practice

1 Find the sum.

(a) 2139 and 4056



(b) 6257 and 324



Estimate the sum before you calculate.



Worksheet 3

Adding with Renaming

1 Add.

$$\begin{array}{r} \text{(a)} \quad 1 \quad 3 \quad 2 \quad 5 \\ + \quad 1 \quad 6 \quad 3 \quad 5 \\ \hline \\ \hline \end{array}$$

$$\begin{array}{r} \text{(b)} \quad 2 \quad 4 \quad 7 \quad 6 \\ + \quad 1 \quad 4 \quad 1 \quad 5 \\ \hline \\ \hline \end{array}$$

$$\begin{array}{r} \text{(c)} \quad 3 \quad 2 \quad 3 \quad 7 \\ + \quad 4 \quad 5 \quad 2 \quad 8 \\ \hline \\ \hline \end{array}$$

$$\begin{array}{r} \text{(d)} \quad 4 \quad 1 \quad 6 \quad 9 \\ + \quad 2 \quad 7 \quad 0 \quad 4 \\ \hline \\ \hline \end{array}$$

$$\begin{array}{r} \text{(e)} \quad 3 \quad 4 \quad 2 \quad 8 \\ + \quad 1 \quad 2 \quad 1 \quad 8 \\ \hline \\ \hline \end{array}$$

$$\begin{array}{r} \text{(f)} \quad 1 \quad 2 \quad 3 \quad 9 \\ + \quad 8 \quad 2 \quad 0 \quad 3 \\ \hline \\ \hline \end{array}$$

$$\begin{array}{r} \text{(g)} \quad 1 \quad 6 \quad 3 \quad 5 \\ + \quad 4 \quad 2 \quad 3 \quad 9 \\ \hline \\ \hline \end{array}$$

$$\begin{array}{r} \text{(h)} \quad 7 \quad 2 \quad 7 \quad 6 \\ + \quad 2 \quad 3 \quad 1 \quad 4 \\ \hline \\ \hline \end{array}$$

Other activities to support practising the skill required.

Children are extended at all levels through questioning.

What impact will Maths No Problem have on our children?

- Children will have a greater conceptual understanding of number and calculation. They will be able to visualise and generalise more readily due to a more in-depth understanding.
- Struggling learners will be fully supported through accessing concrete equipment and use of visual models to support understanding
- Confident learners will be challenged through exposure to unfamiliar problems, development of reasoning skills and exploring multiple ways to manipulate numbers and solve problems
- All learners will access teaching of content which matches the expectations of the 2014 curriculum in England and be supported further if needed in order to access this. The resources match the expectations for formal written methods set by the government, alongside greater understanding (in order to reach 'mastery').

- workstation (year group) of your choice

Maths at Home

Resources are ideal – these can be purchased from a wide variety of popular websites.

When children are stuck at home: Re-affirm the instructions.

Ask children how they might solve the problem. Can they draw anything to support the problem and explain to you how they would solve it.

Review the efficient written method from our calculation policy – an update will be coming soon to showcase the concrete method to support this journey. Ask the children to speak to their teacher for support.

- Questions
- Please complete a feedback form before you leave