WHY DO WE USE SINGAPORE MATH® IN MATH CIRCLES?

Here are the five reasons for why we have chosen Singapore Math® as our core resource for Alpha and Beta classes.

Reason 1: High Expectations and Excellent Results

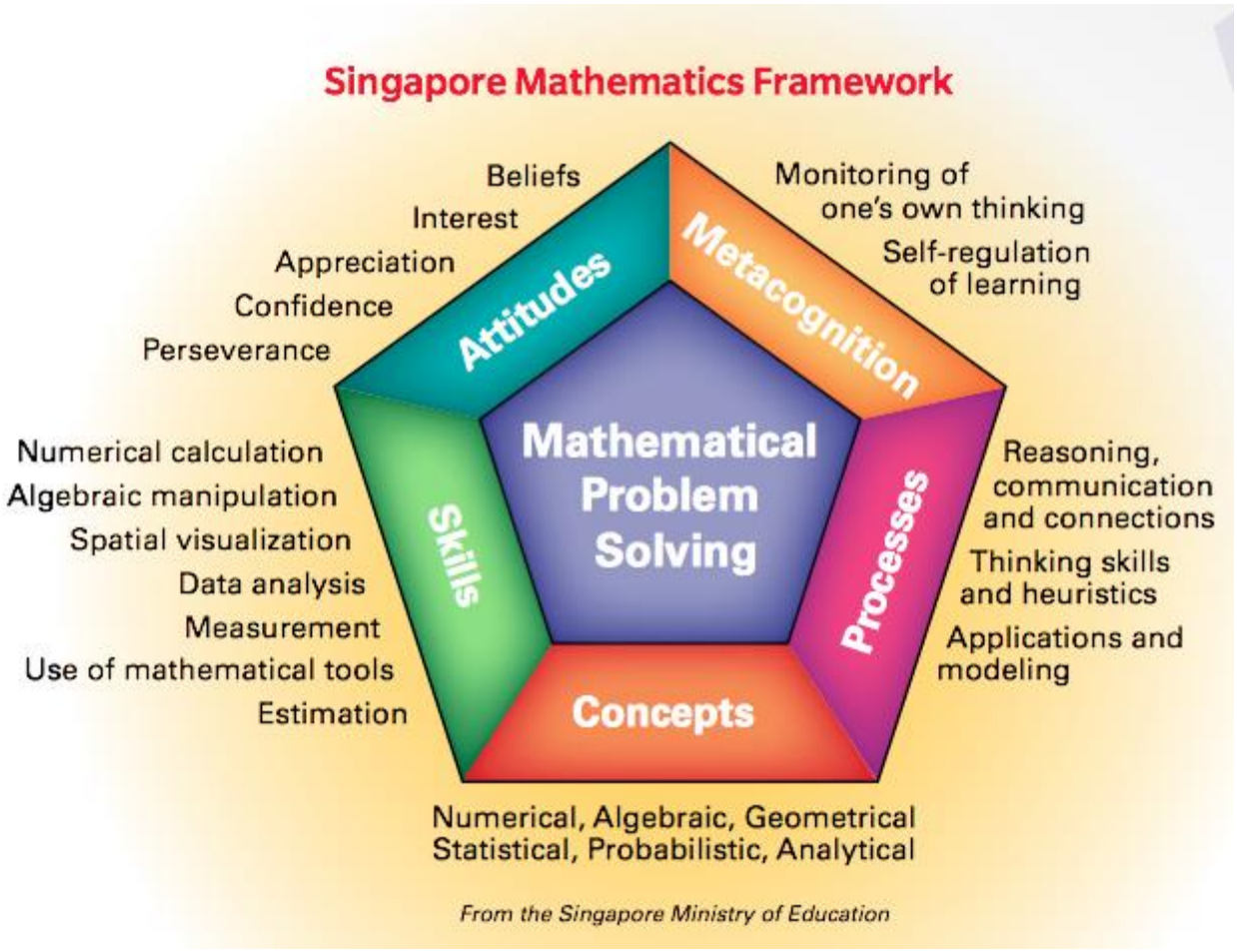
Singapore Math® employs a true and tested curriculum, achieving consistent results on the national level as measured by PISA (OECD Programme for International Students) and TIMSS (Trends in International Mathematics and Science Study) in international studies of student outcomes and achievement across countries. Singapore consistently comes in first place as evidenced below.

	Science		Reading		Mathematics	
	Mean score in PISA 2015	Average three-year trend	Mean score in PISA 2015	Average three-year trend	Mean score in PISA 2015	Average three-year trend
	Mean	Score dif.	Mean	Score dif.	Mean	Score dif.
OECD average	493	-1	493	-1	490	-1
Singapore	556	**7**	535	**5**	564	1
Japan	538	3	516	-2	532	1
Estonia	534	2	519	**9**	520	2
Chinese Taipei	532	0	497	1	542	0
Finland	531	**-11**	526	**-5**	511	**-10**
Macao (China)	529	**6**	509	**11**	544	**5**
Canada	528	-2	527	1	516	**-4**
Viet Nam	525	-4	487	**-21**	495	**-17**
Hong Kong (China)	523	**-5**	527	-3	548	1
B-S-J-G (China)	518	m	494	m	531	m
Korea	516	-2	517	**-11**	524	-3
New Zealand	513	**-7**	509	**-6**	495	**-8**
Slovenia	513	-2	505	**11**	510	2
Australia	510	**-6**	503	**-6**	494	**-8**
United Kingdom	509	-1	498	2	492	-1
Germany	509	-2	509	**6**	506	2
Netherlands	509	**-5**	503	-3	512	**-6**
Switzerland	506	-2	492	-4	521	-1
Ireland	503	0	521	**13**	504	0
Belgium	502	-3	499	-4	507	**-5**
Denmark	502	2	500	3	511	-2
Poland	501	3	506	3	504	**5**
Portugal	501	**8**	498	4	492	**7**
Norway	498	3	513	**5**	502	1
United States	496	2	497	-1	470	-2

Source: *http://www.oecd.org/pisa/pisa-2015-results-in-focus.pdf*

Reason 2: Balanced Curriculum

Singapore Math® provides an effective framework for the development of mathematical competencies with mathematical problem solving at its core. It is not enough for students to be fluent in their computational skills or to understand the concepts well, but they also need to know when and how to apply these skills and how to make judgments about their mathematical results.



Reason 3: Curriculum is Focused on Mastery of Learning

The Singapore Math® curriculum follows a clear presentation of topics and the content is learned in depth. The strong point of *Primary Mathematic* is its clear and multi-pronged presentation of concepts, using multiple representations. There is an effective mix of drills, word problems and mental calculation instruction connected to all important concepts. While typical North American curricula touch on a larger number of topics superficially (curricula that have been dubbed as "a mile long and an inch deep"), Primary Mathematics presents the core math curriculum in a way that better prepares students for higher math. Singapore Math® provides a coherent view of mathematics because fewer and more important topics are being studied at greater depth, thus ensuring greater transfer and applicability of knowledge in the long run.

Reason 4: Research-Based Approach to How Students Learn Mathematics Most Effectively

Singapore Math® follows the Concrete – Pictorial – Abstract (CPA) approach to learning mathematical concepts. This allows for effective building of conceptual understanding, rather than resorting to memorization of poorly understood procedures. Watch "Maths - No Problem" video to see this concept explained - https://www.youtube.com/watch?v=c4qUoOMcmKI.

Reason 5: Use of Tools for Thinking

Primary Mathematics teaches a problem solving technique in which students use pictorial models. This approach is often called the model approach. In the model approach, students draw bar diagrams to represent problem situations. This allows students to visually relate various information to an unknown amount and helps them determine which mathematical expressions are useful in solving the problem.

The purpose of drawing the models is not to encourage students to follow specific rules, but to understand the concepts and choose an appropriate problem solving method. For complex problems, several strategies are possible, and drawing the model allows the student to visualize a good strategy. Drawing bar models is a valuable tool for solving non-routine problems. These problems might also be solved using algebra, but for children at the primary level a model approach can be preferable since it is less abstract.

The model approach is most effective when integrated throughout the program. Model drawing can be used across different levels, and has a strong link to algebra in the secondary level. Students in Primary Mathematics grades 1 and 2 use number bond diagrams to solve simple word problems before they are ready to draw proportional bars in higher levels.

A commonly used strategy is to draw units or divide a bar into units, equate the number of units to a quantity (which is either given or calculated from other quantities given in the problem), form a proportion statement, and finally to use a unitary or proportion method to get the answer. In Primary Mathematics, a unitary method is used in understanding and solving fraction, percentage, ratio, and rate problems, without necessarily drawing a bar model. Other pictorial methods are used in the program to help students understand concepts.

The model approach, while an integral part of Singapore Math®, represents just one part of the program. There are many other benefits when using the Primary Mathematics program. [Taken from http://www.singaporemath.com/FAQ_Primary_Math_s/15.htm].