



Students applying the concept taught and knowledge acquired in a fun and exciting way by playing various modes of games.



Students putting into practice what they are taught. They visited a Supermarket to experience the use of Money. (Prior to the activity, students learned addition, subtraction of dollars and cents and budgeting.



Understanding fractions better with CPA approach – slicing the pizzas.



Students using measuring tape to go around the school and measure objects in groups. They also did a weighing activity where they weighed numerous objects that were below 1kg as part of their Learning Experience Activity.



Students explaining their understanding of the concept besides using the Math Journal to develop thinking and reasoning skills for SG Math.

Photos credit to Invictus International School (Centrium)

Don't miss this opportunity to position your child at the forefront of mathematical excellence. Enroll at Invictus Schools today and witness a transformation that extends beyond the classroom, building a foundation for lifelong success.

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## ► SINGAPORE MATHEMATICS

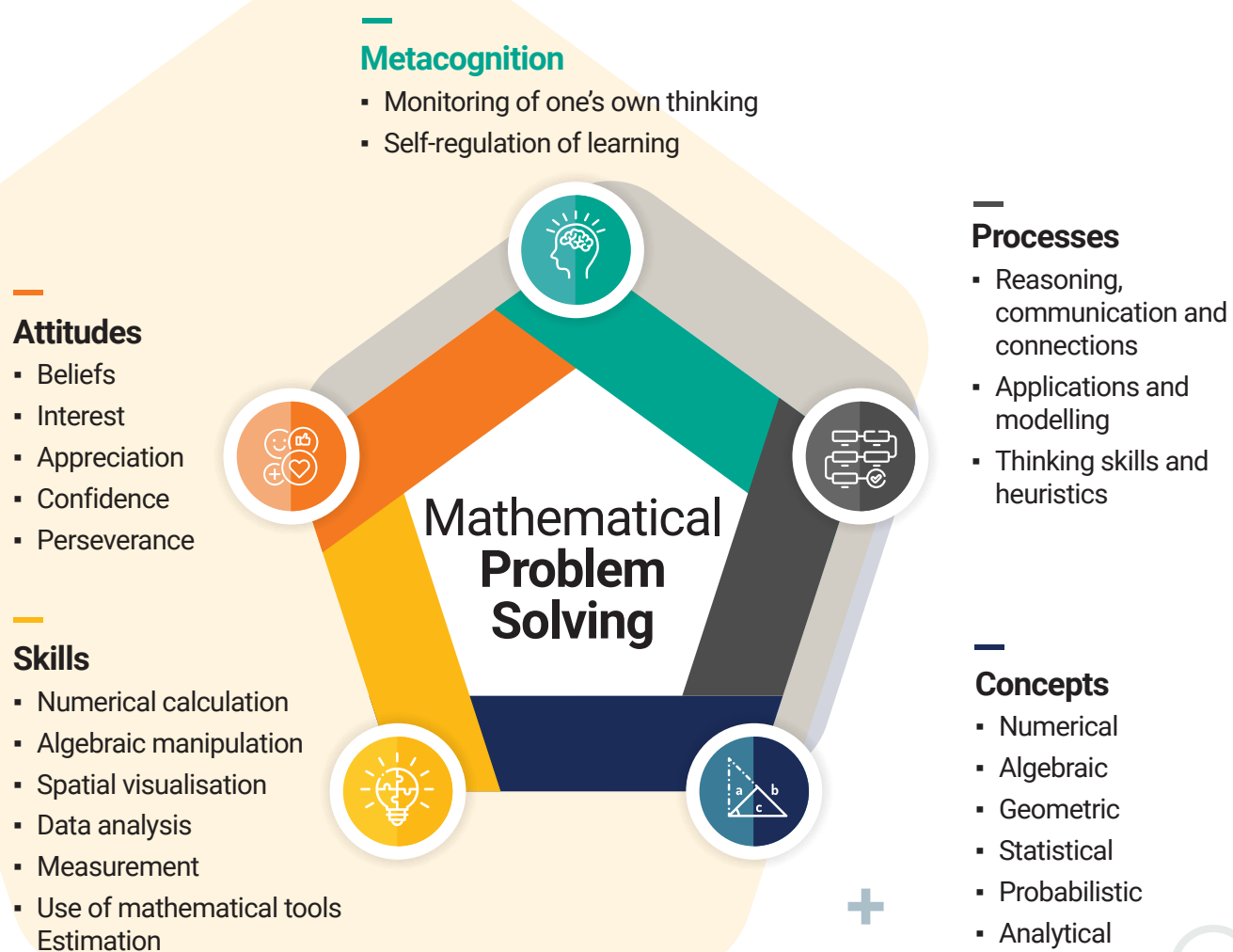
Mathematics is an important foundation for various disciplines, including the Sciences and Social Sciences. It also serves as a foundation for many current and future innovations. In addition, it plays a significant role in our daily activities, including making sense of information and managing personal finances.





## Singapore Mathematics

Singapore has consistently achieved high results in international benchmarking assessments, such as the Trends in International Mathematics and Science Study (TIMSS) and the Programme for International Student Assessment (PISA) for Mathematics. Singapore adopts the following framework in teaching Mathematics in Singapore's elementary schools.



Source adapted from: Singapore Ministry of Education

The framework stresses conceptual understanding, skills proficiency and mathematical processes, and gives due emphasis to attitudes and metacognition. These five components are inter-related.

Singapore uses a spiral curriculum in elementary math education, revisiting and advancing concepts over time. The Concrete-Pictorial-Abstract (CPA) approach aids in understanding and problem-solving, utilizing tools like number bonds and the model method. Students also learn heuristics and mental calculation techniques.

## The CPA Approach

Let's illustrate the use of the CPA approach using the simple example of adding  $3 + 2$  to get 5.

**C**

### CONCRETE



In the first step, students are exposed to the use of tangible objects in their learning experiences. Students learn mathematical concepts by using objects that they are familiar with and can relate to. For a concrete representation, the teacher may use pictures or actual apples to represent the number, 3 and pears to represent the number, 2.

**P**

### PICTORIAL



The second step involves students drawing pictorial representations of the mathematical concepts taught. Students learn to visualise numbers and word problems using visual aids like the bar-models (as shown below) or pie-charts to represent the numbers.

**A**

### ABSTRACT

$$3 + 2 = 5$$

In the lower grades, the focus is on the first two steps – Concrete and Pictorial. Students then solve mathematical problems abstractly by using numbers and symbols at the higher levels. In the Abstract stage, students will be ready to use mathematical symbols ( $+$ ,  $-$ ,  $\times$ ,  $\div$ ) and notations ( $a, b, c, x, y, z$ ) to solve mathematical problems. For example, the bar-model above will be translated to  $3 + 2 = 5$ .

## Learning Mathematics at Invictus Schools



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At Invictus schools, we adopt the same approach that Singapore uses to teach Mathematics in their elementary schools. By adopting the Singapore Mathematics approach in our Invictus schools, we help our students gain confidence and become more resourceful after learning mathematics. Thus they will become more successful problem solvers because of their deep conceptual understanding of mathematical concepts and problem-solving heuristics.

Our Mathematics lessons in our elementary schools are conducted during curriculum time and the duration can stretch between 3 – 4 hours per week.