An Introduction to Singapore Math
Do you have math anxiety?

“Evidence suggests that math anxiety results more from the way the subject is presented than from the subject itself.”

-Greenwood
Singapore Math

This program is **based on the concrete, pictorial, abstract approach**. This approach, founded on the work of renowned cognitive American psychologist Jerome Bruner, encourages mathematical problem solving, thinking, and communication.

Three foundational areas that support the Singapore Math

Mental math

Problem solving

Computation taught by number sense and place value
Development of Singapore Math

- 1981-1982 – First Primary Mathematics curriculum was developed
- 1992 – Revised to make it a problem-solving curriculum
- 1994-1999 – Curriculum was reduced
- 2003 – Primary Mathematics U.S. Edition was published
- 2007- Math in Focus is the U.S. version of the most widely used program in Singapore.
- 2008 – Primary Mathematics Standards Edition was published
- 2014 – Primary Mathematics CCSS Edition was published
Singapore’s Mathematics Framework

Beliefs
- Interest
- Appreciation
- Confidence
- Perseverance

Attitudes
- Monitoring of one’s own thinking
- Self-regulation of learning

Metacognition
- Numerical calculation
- Algebraic manipulation
- Spatial visualization
- Data analysis
- Measurement
- Use of mathematical tools
- Estimation

Skills
- Reasoning, communication and connections
- Thinking skills and heuristics
- Applications and modeling

Processes

Concepts
- Numerical, Algebraic
- Geometrical, Statistical
- Probabilistic, Analytical

From the Singapore Ministry of Education
Big Ideas in Singapore Math

- Number sense
- Making connections and finding patterns
- Communication
- Visualization
  - Concrete → Pictorial → Abstract
- Variation
- Singaporean teaching model
Singaporean Teaching Model

- Assessing
- Understanding
- Transferring
- Consolidating
Program Highlight

- Singapore Math is a base-10 core curriculum for students in kindergarten through 12th grade.
- Instructional time is devoted to mastering essential math skills.
- Singapore Math utilizes pictorial models to transition students between concrete mathematical experiences and abstract representations. Models include bar models, ten frames, arrays, and place value charts.
- Singapore Math utilizes the "bar model" method to solve multi-step word problems.
- In Singapore Math, students are deliberately taught the "whys" of mathematical rules as opposed to mere memorization of those rules.
Why Students Achieve Success

- It encourages algebraic thinking even among early learners
- Reduces complexity
- Encourages mental math for more efficient problem solving
- Promotes deeper understanding of essential math concepts
- Enhances problem-solving skills
- Helps all students – as intervention strategies to support struggling learners and as extension strategies to challenged more advanced learners.
Singapore Rises to the Top

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Math In Focus Unit Format

Recall Prior knowledge and quick check

Lessons

Cumulative chapter review/assessment

Lesson Format: Direct Instruction, guided Practice, hands-on activities, let’s practice, independent Practice, brain works

Reteach

Extra Practice
How Can Parents Help?

Please trust in this unfamiliar way of teaching. We want the children to understand why before teaching the algorithms.

Please ensure your child is practicing math facts nightly.

Homework: Reinforces skills taught during class
- Not always just a worksheet. Can be practicing facts, sorting, word problems with bar modeling, and internet links.
- Support, but do not do it for them!
How many watermelons are there?
Model Drawing

In all, 760 students attended Ryle Middle School. If \( \frac{3}{5} \) were girls, how many more girls than boys attended Ryle Middle School?
A flock of geese on a pond were being observed continuously. At 1:00pm, 1/5 of the geese flew away. At 2:00pm, 1/8 of the geese that remained flew away. At 3:00pm, 3 times as many geese as had flown away at 1:00pm flew away, leaving 28 geese on the pond. At no other times did any geese arrive or fly away. How many geese were in the original flock?
Model Drawing

The difference between the two numbers is 2,184. If the bigger number is three times the smaller number, find the sum of the two numbers.
At Big Al’s restaurant, three cheeseburgers and two orders of fries cost $5.60. Four cheeseburgers and three orders of fries cost $7.80. How much does a single cheeseburger and a single order of fries each cost separately?
“Do the best you can until you know better. Then when you know better, do better.”

Maya Angelou
Final Thoughts

In order to change the way a student learn, teachers must change the way they teach.

Thank you!