



Singapore Examinations and Assessment Board

Assessment of Mathematics in Singapore

Toh Hoon Sin

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Why teach mathematics?

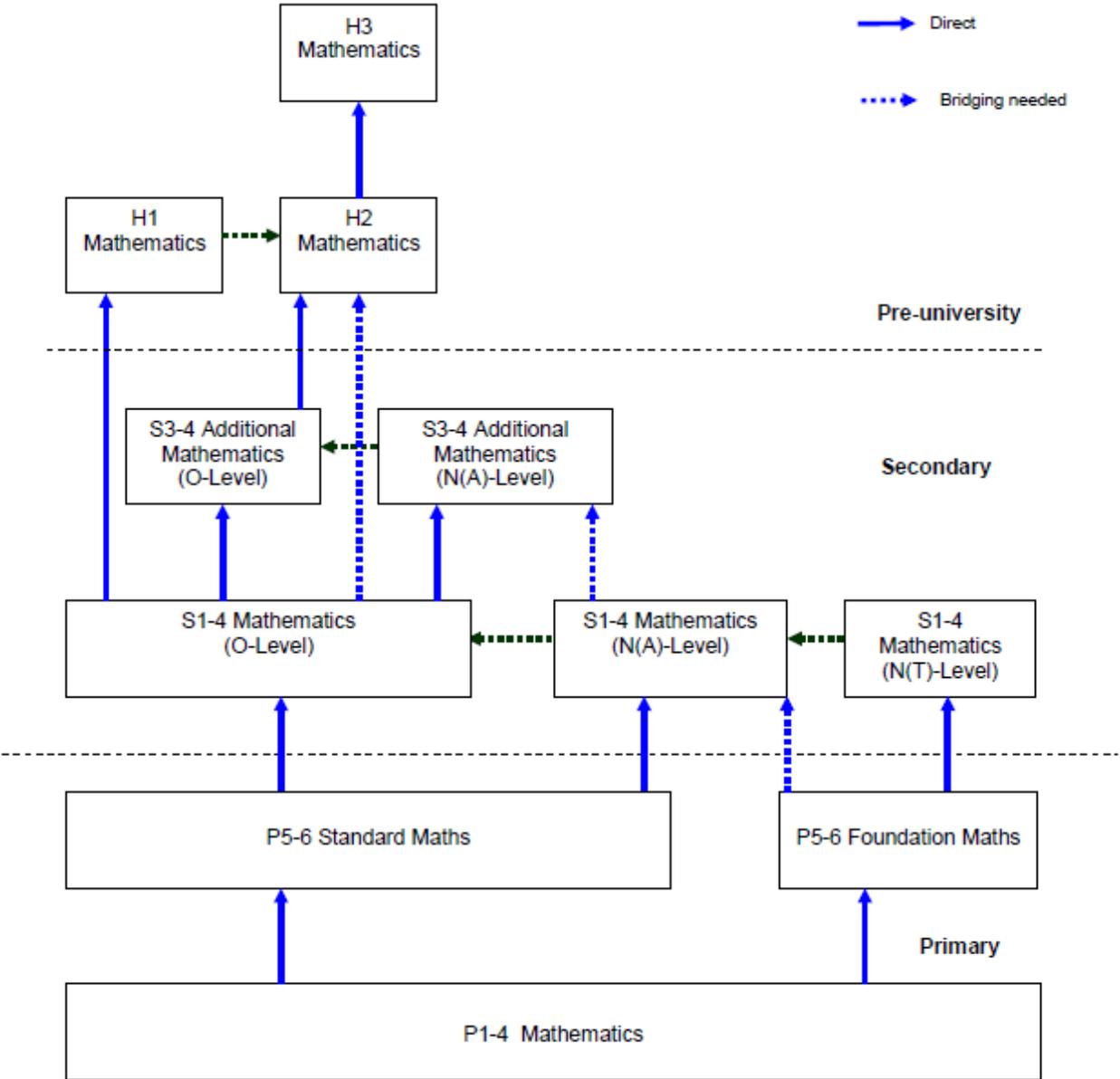
- Prepare our citizens for a productive life in the 21st century.
- Development of a highly-skilled and well-educated manpower is critical to support an innovation- and technology-driven economy.

Why teach mathematics?

At the individual level, mathematics

- underpins many aspects of our everyday activities
- supports learning in many fields of study
- provides an excellent vehicle to train the mind, and
- develops the capacity to think logically, abstractly, critically and creatively.

Mathematics Education in Singapore – Years 1 to 12

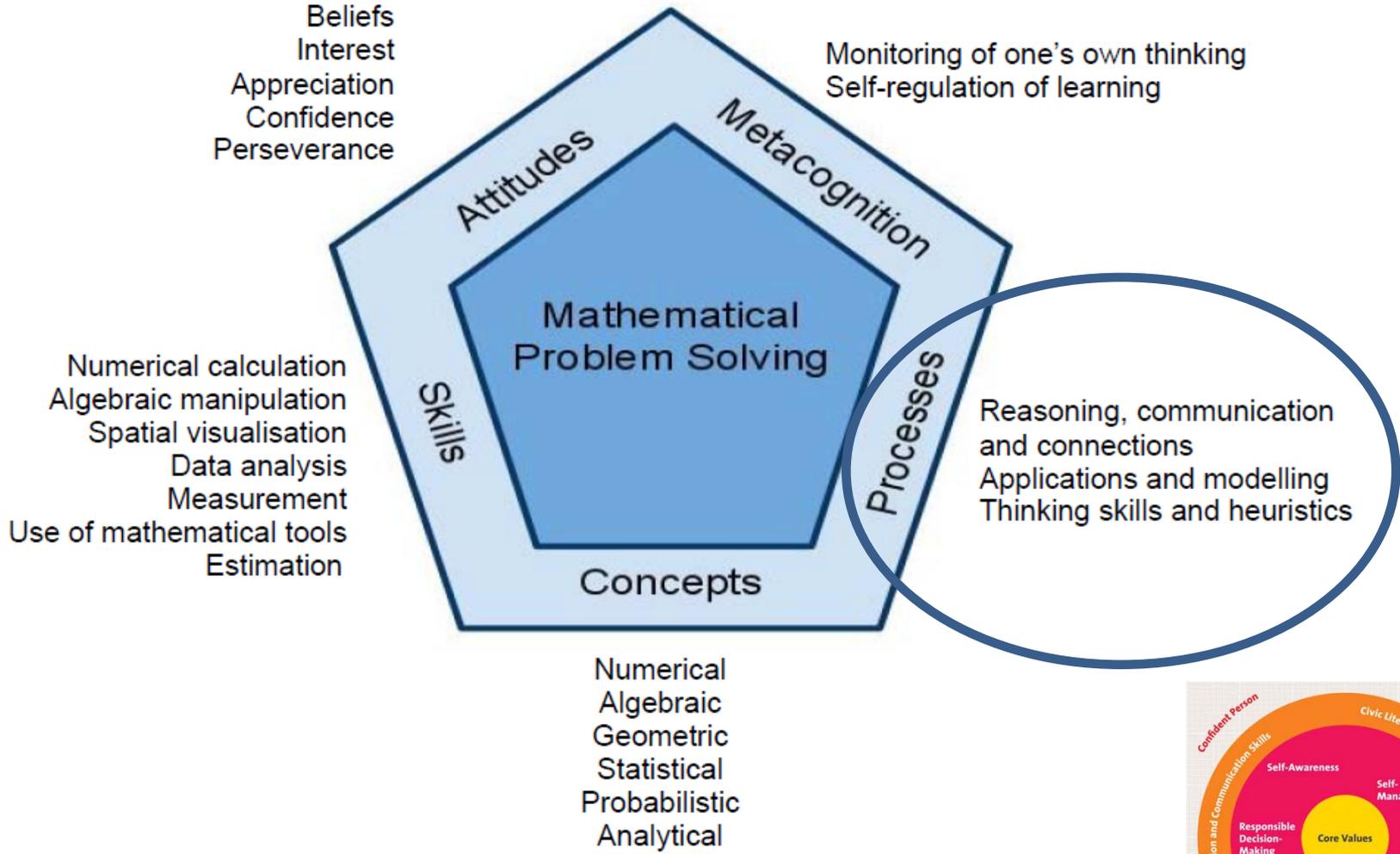


Syllabus Review – 21st CC framework



21st Century Competencies and Desired Student Outcomes

Syllabus Review - Emphasizing mathematical processes



Syllabus Review

3 key ideas from the review

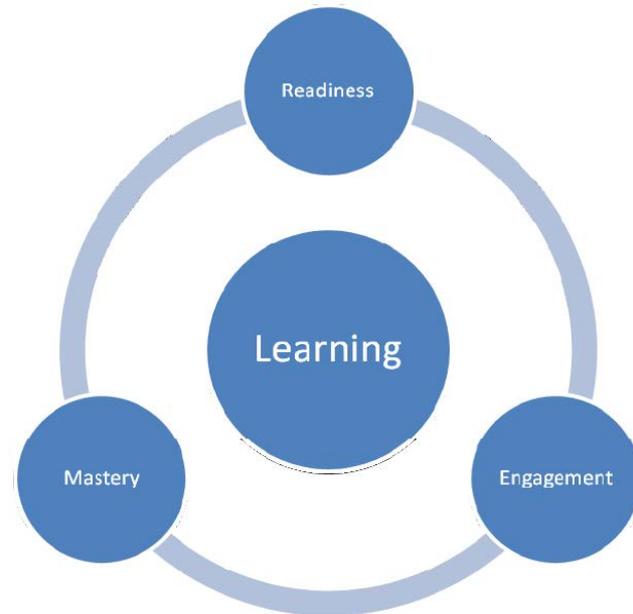
- Sharpening the focus of each syllabus
- Emphasizing mathematical processes
- Influencing teaching and learning

Syllabus Review - Sharpening the focus

- Each syllabus has a set of specific aims to focus the teaching & learning
- All syllabuses will address
 - Learning of relevant mathematics concepts and skills
 - Developing process skills through a mathematical approach to problem solving
 - Inculcating positive affects towards mathematics

Syllabus Review – Influencing teaching and learning

- Learning experiences
- Principles of teaching
- Phases of learning:
 - Readiness
 - Engagement
 - Mastery



Syllabus Review – Aims of Primary Mathematics Syllabus

- Acquire mathematical **concepts and skills** for **everyday use** and for continuous learning in mathematics.
- Develop **thinking, reasoning, communication, application** and **meta-cognitive skills** through a mathematical approach to problem-solving.
- Build **confidence** and **foster interest** in mathematics.

Year-by-year implementation

2013	2014	2015	2016	2017	2018
Primary 1	Primary 2	Primary 3	Primary 4	Primary 5	Primary 6

Syllabus Review - Primary Mathematics

3 Content Strands + 1 Process Strand

Number and
Algebra

Measurement
and Geometry

Statistics

Mathematical Processes

Minimal change to the content, mainly movements across grade levels.

Primary Mathematics

The Primary Mathematics syllabus assumes no formal learning of mathematics.

The following programmes support students who are weak in Mathematics:

LSM - LEARNING SUPPORT FOR MATHEMATICS



Improving Confidence and
Achievement in Numeracy

Primary School Leaving Examination (PSLE) - Mathematics

PSLE
Standard Mathematics

PSLE
Foundation Mathematics

P5-6
Standard Mathematics

P5-6
Foundation Mathematics

P1-4 Mathematics



Primary Mathematics – PSLE Examination Format

- PSLE Mathematics exam syllabus is aligned to the Primary Mathematics teaching syllabus
- The PSLE paper allows students to show their mastery of mathematics concepts and skills and to apply them in problem solving.
- The paper caters to P6 students of different abilities and includes a range of questions from basic to challenging.

Primary Mathematics – PSLE Examination Format

Purpose of the Mathematics examination: To assess students' attainment in mathematics at the end of primary education with respect to the objectives of syllabus

ASSESSMENT OBJECTIVES:

Students should be able to:

recall specific mathematical facts, concepts, rules and formulae, and perform straightforward computations.

Knowledge

interpret data and use mathematical concepts, rules and formulae, and solve routine or familiar mathematical problems.

Comprehension

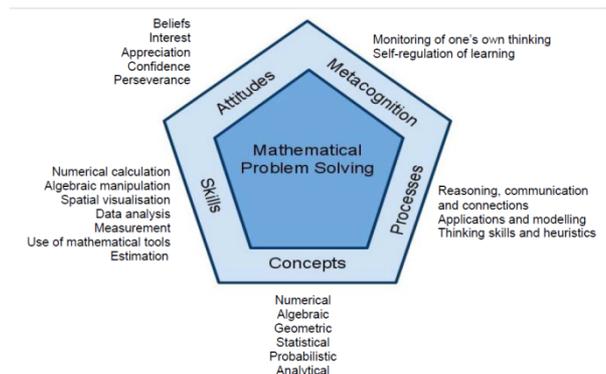
analyse data and/or apply mathematical concepts, rules and formulae in a complex situation, and solve unfamiliar problems.

Application & Analysis

Primary Mathematics – PSLE Examination Format

Singapore Mathematics Syllabus document:

Mathematical problem solving is central to mathematics learning. It involves the acquisition and application of mathematics concepts and skills in a wide range of situations, including non-routine, open-ended and real-world problems.



Primary Mathematics – PSLE Examination Format

The examination consists of two written papers comprising three booklets.

Paper	Booklet	Item Type	Number of questions	Number of marks per question	Weighting	Duration
1	A	Multiple-choice	10	1	10%	50 min
			5	2	10%	
	B	Short-answer	10	1	10%	
			5	2	10%	
2		Short-answer	5	2	10%	1 h 40 min
		Structured / Long-answer	13	3, 4, 5	50%	
Total			48	-	100%	2 h 30 min

Primary Mathematics – Examples of PSLE questions

Assessment Objective: Knowledge

- Find the value of $1 - \frac{1}{4} - \frac{1}{3}$
- Write down the two common factors of 6 and 21.
- Express 145 minutes in hours and minutes.

Primary Mathematics – Examples of PSLE questions

Assessment Objective: Comprehension

- The average of four 3-digit numbers is 250. Two of the numbers are 190 and 230. What is the largest difference between the other two numbers?
- Alex finished polishing his bicycle at 1.10 p.m. He took 1 hour and 45 minutes to finish this task. At what time did he start polishing his bicycle?

Primary Mathematics – Examples of PSLE questions

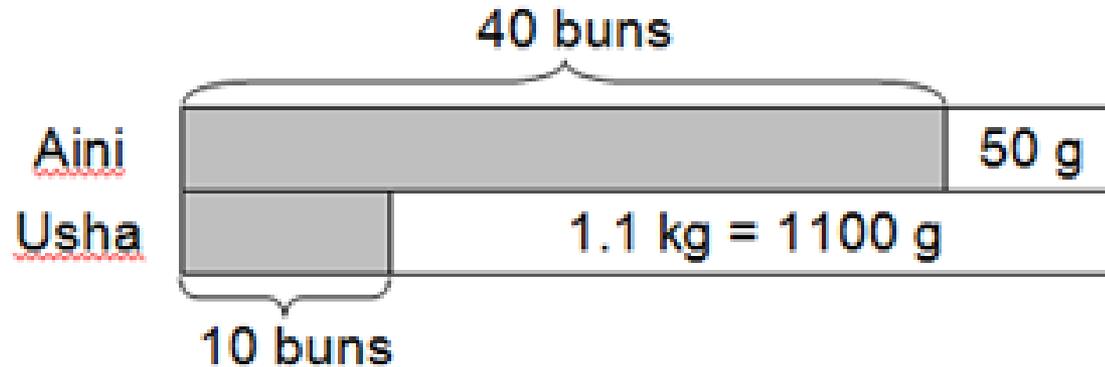
Assessment Objective: Applications & Analysis

Aini and Usha each had a piece of dough of the same mass for making buns. The same mass of dough was used for each bun. Aini made 40 buns and had 50 g of dough left. Usha made 10 buns and had 1.1 kg of dough left.

- (a) What was the mass of dough needed for each bun?
- (b) With the remaining dough from both girls, how many more such buns can be made at most?

Primary Mathematics – Examples of PSLE questions

Solution: Drawing Model



- (a) Mass of dough for 30 buns = $1100 - 50 = 1050$ g
Mass of dough for each bun = $1050 \div 30 = \underline{35}$ g
- (b) Mass of remaining dough = 1100 g + $50 = 1150$ g
 1150 g \div 35 g = 32 R 30 g
Number of buns = 32

Primary Mathematics – Examples of PSLE questions

Alternative Solution: Using Guess and Check

(a) $1.1 \text{ kg} = 1100 \text{ g}$

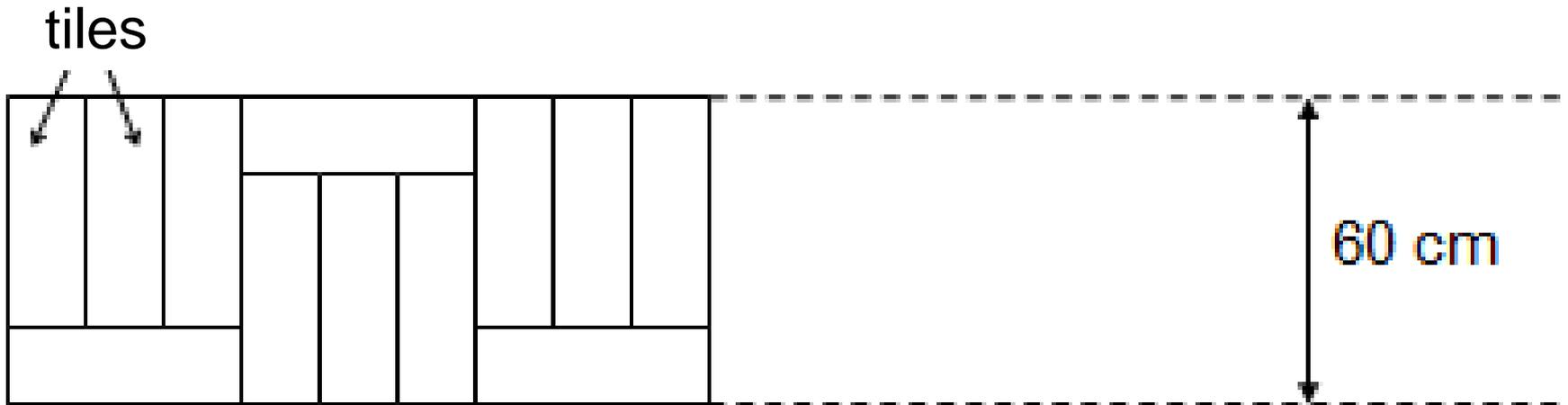
Mass for 1 bun	Mass for 10 buns + 1100 g	Mass for 40 buns + 50 g	Check
20 g	1300 g	850 g	✗
30 g	1400 g	1250 g	✗
...	
35 g	1450 g	1450 g	✓

Mass of dough for each bun = 35 g

Primary Mathematics – Examples of PSLE questions

Assessment Objective: Applications & Analysis

A path of length 18 m is completely covered with identical tiles, following the pattern shown below. The width of the path is 60 cm. How many tiles were used to cover the entire path?



Primary Mathematics - Challenges

- Ensuring that there are questions that assess “problem solving”
- Managing public perception of standard of PSLE Mathematics - To reduce 'over-preparation', past PSLE papers are available to public



Primary Mathematics – Blue Sky Ideas



Thank you!



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