

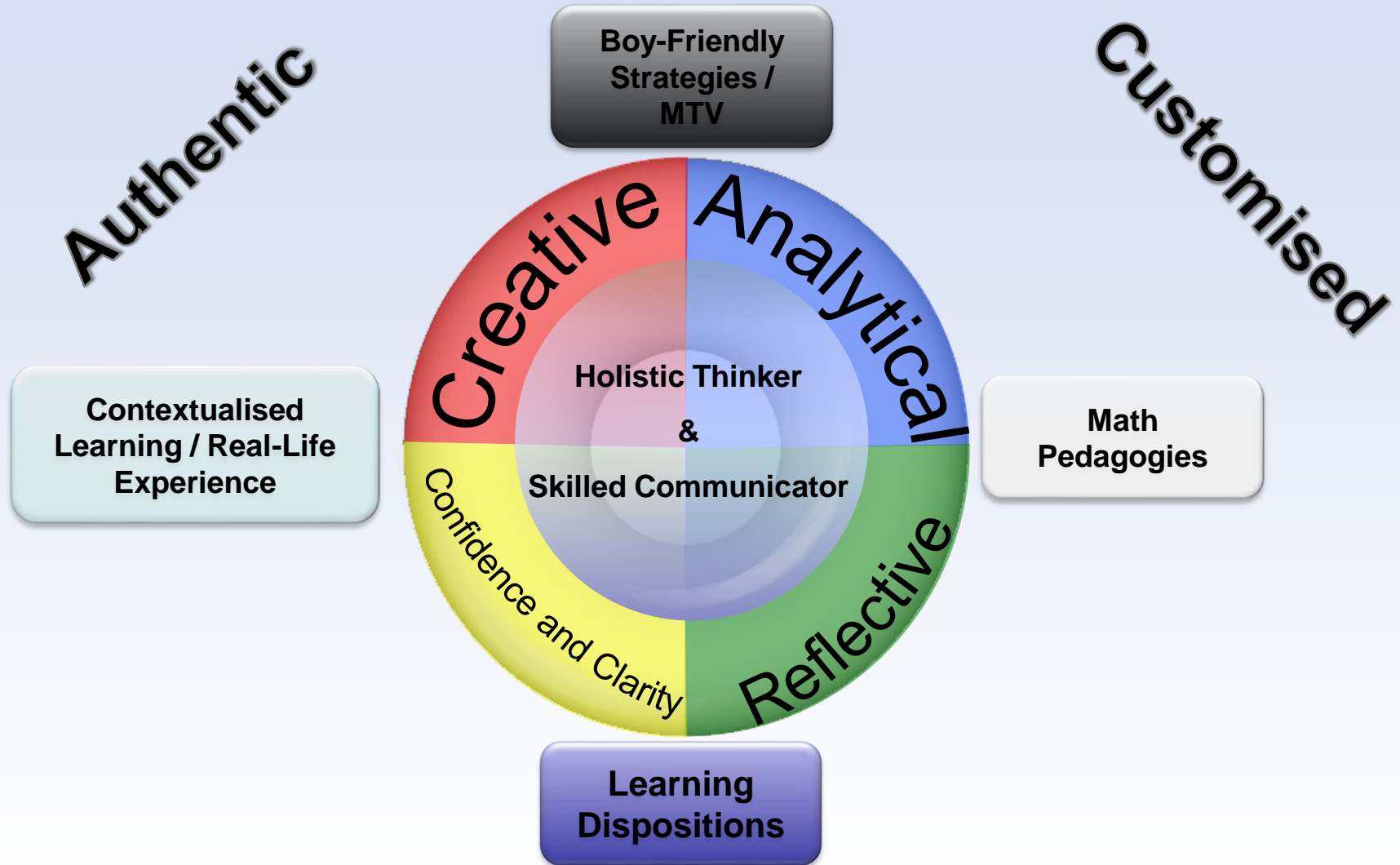
Nurturing a Holistic Thinker and Skilled Communicator in Mathematics



Every Saint an Analytical, Self-directed problem-solver by acquiring thinking, reasoning, communication, application and metacognitive skills.



Our Math Department Vision
Every Saint, is an analytical, self-directed problem-solver



Embedded Values

SAJS

Signature Pedagogy



Teaching understanding of concepts through 3 representations

E

Enactive

- Provide learning experiences through the use of concrete materials, manipulatives or hands-on activities.

P

Pictorial

- Provide learning experiences with the use of visual medium : pictures, diagram, images, videos, etc to allow pupils to generate mathematical rules and regulations through questioning.

A

Abstract

- Provide learning experiences for identification and application of problem-solving skills and strategies, as well as the explanation of concepts, giving examples and non-examples and justification for specific rules and solutions.



SAJS Problem-Solving Approach

- To promote cognitive and metacognitive process skills (HT skills)
when applying problem-solving skills / heuristics

SAJS Problem Solving Approach

1

- **Read and Understand**

- Have I used **Structured Questioning** ?
- Have I used **chunking** to identify key information?
- Can I restate the problem by drawing a picture or diagram to help me understand the problem?

2

- **PLAN**

- What **strategy or heuristics** can I use to solve the problem? **What makes you say that?**

3

- **Carry out the Plan**

- Did I label my steps?
- Did I use the right mathematical symbols?
- If I am stuck, do I have an **alternative method**? **What makes you say that?**

4

- **Check**

- Does the answer make sense?
- Have I **check** for reasonableness and accuracy? (**Confirm**)
- Have I checked for calculation errors?
- Have I checked for transfer errors?
- Have I transferred information correctly?
- Have I included the correct measurement units?



Structured Questioning and Chunking

- (4) Amy saved \$3210. Mia saved twice as much as Amy. Amy saved 3 times as much as Ned.
- How much did Ned save?
 - How much money must Mia give to Ned so that they each have the same amount of money?

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Format of SA1 Paper

Booklet	Item Type	No. of Questions	Weightage	Duration
Section A	MCQ	15 (2-mark questions)	30%	1 hour 45 min
Section B	Short Answer Questions	20 (2-mark questions)	40%	
Section C	Word Problems	8 (2 3-mark and 6 4-mark questions)	30%	

Note: Total Marks is (30% overall): 100 marks



Format of SA2 Paper

Booklet	Item Type	No. of Questions	Weightage	Duration
Section A	MCQ	15 (2-mark questions)	30%	1 hour 45 min
Section B	Short Answer Questions	20 (2-mark questions)	40%	
Section C	Word Problems	8 (2 3-mark and 6 4-mark questions)	30%	

Note: Total Marks is (70% overall): 100 marks

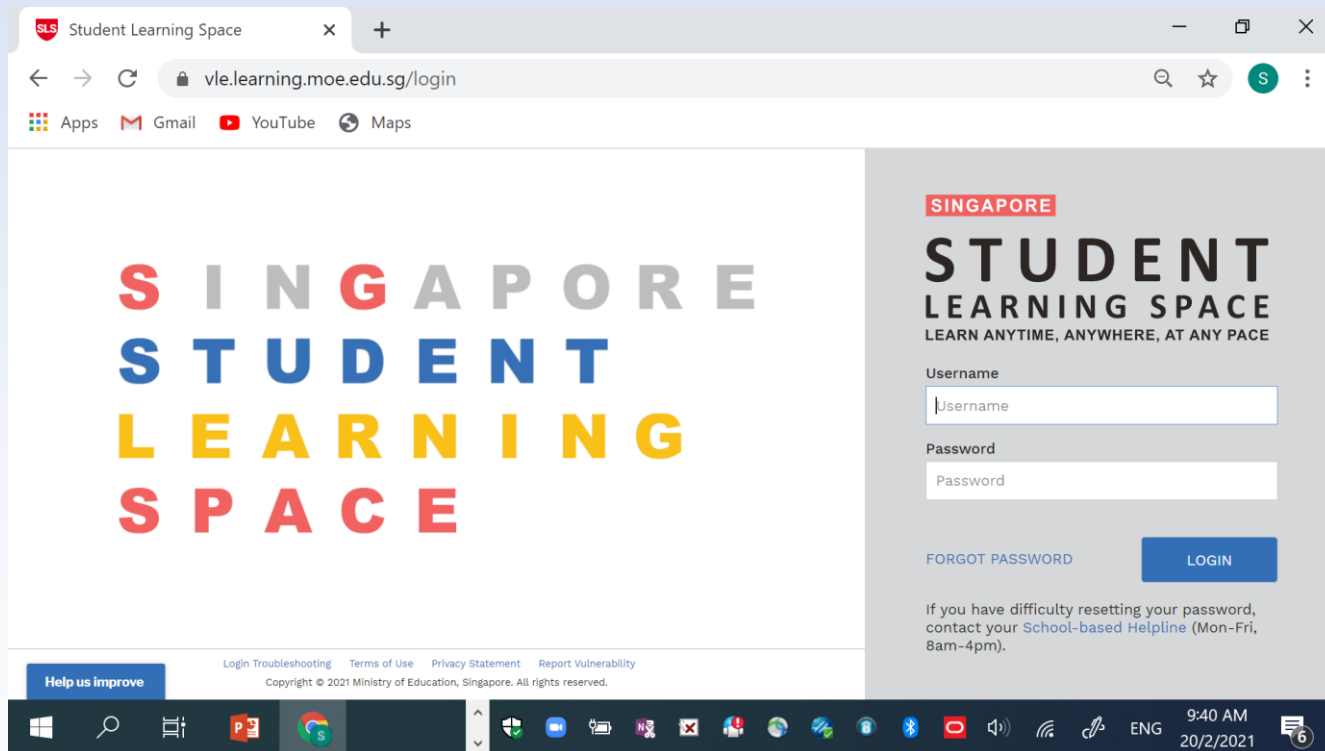


Materials Used in Class

- My Pals are Here TB 4A and 4B
- My Pals are Here Workbook 4A and 4B
- Heuristics Booklets
- Topical Review (Term 1 and Term 3)
- Practice Papers (prior to SA1 and SA2)
- Mini whiteboard and markers
- Green pen (for corrections)
- **Blue file** – Semester 1 Workbook and Heuristics Booklets
- **Purple file** – Semester 2 Workbook and Heuristics Booklets



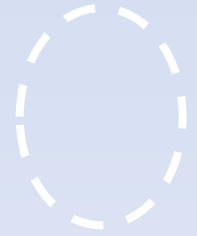
Online Teaching and Learning Resources



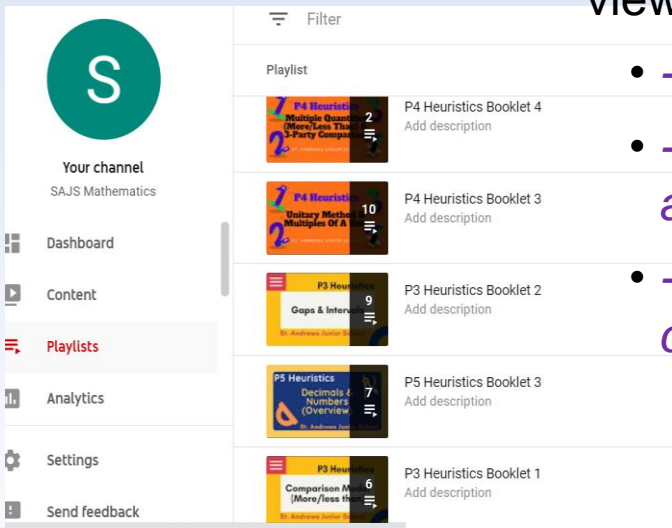


Your channel
SAJS Mathematics

SAJS MATHEMATICS YOUTUBE CHANNEL



We develop online heuristics teaching and learning videos for students', parents' and fellow teachers' viewing and learning.



- - *learning together*
- - *students to be familiar with problem-solving skills and Math language used*
- - *to demonstrate holistic thinking and skilled communication in Mathematics*

P4 Heuristics Booklet 2



Just scan QR Code
and you can select the
video to view

<https://tinyurl.com/sajsp4mah2>

- QR Codes are found in all level heuristic booklets





<https://tinyurl.com/sajsp4mah2>

The number of sweets I have is between 20 and 30.
 (if) give each friend 4 sweets, I have 1 sweet left over. *Excess*
 (if) give each friend 5 sweets, I would need 4 more. *Shortage*
 How many sweets do I have? How many friends do I have?

	4th	5th	6th	7th
Multiples of 4	16	20	24	28
(Multiples of 4) + 1	17	21	25	29

I have 21 sweets and 5 friends.

Check by substitution

$$5 \times 4 + 1 = 21$$

$$5 \times 5 - 4 = 21$$

	4th	5th	6th	7th
Multiples of 5	20	25	30	35
(Multiples of 5) - 4	16	21	26	31

Check by working backwards

$$21 \div 4 = 5 \text{ r}1$$

$$21 \div 5 = 4 \text{ r}1 \text{ (short of 4 to reach the 5th multiple)}$$

P4 Heuristics Whole Numbers [Booklet 2 WS1] - Excess & Shortage Example v1

E.g Daniel and Patrick had equal number of stickers at first. Daniel gave away 24 of his stickers and Patrick bought another 10 stickers. In the end, Patrick had twice as many stickers as Daniel. Find the number of stickers Daniel had at first.

$$u = 24 + 10$$

$$= 34$$

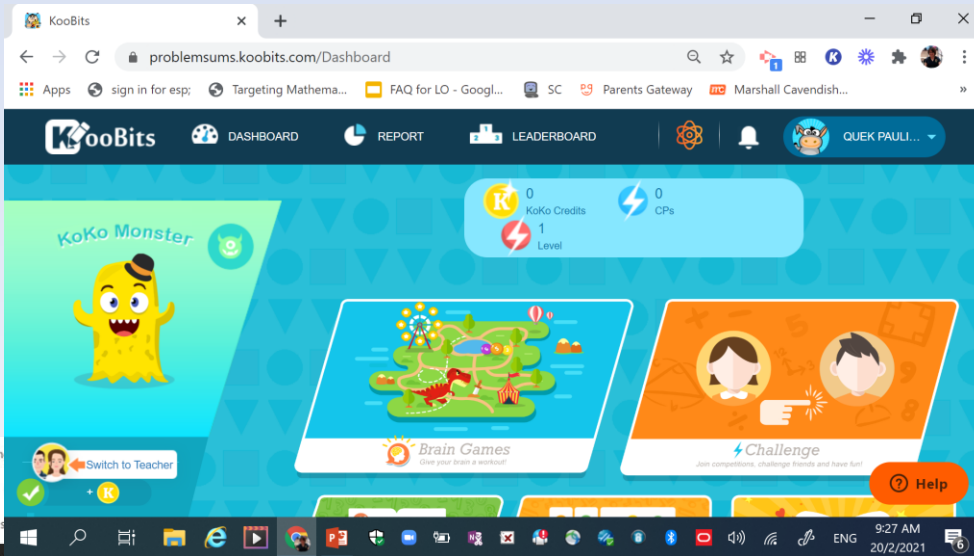
$$24 + 34$$

$$= 58$$

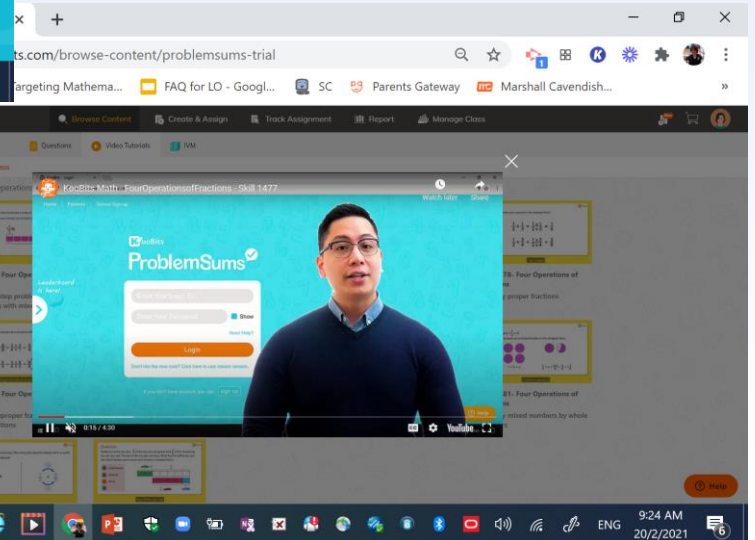
P4 Heuristics Whole Numbers [Booklet 2 WS3] - External Transfer Example



Supporting Online T&L Resources

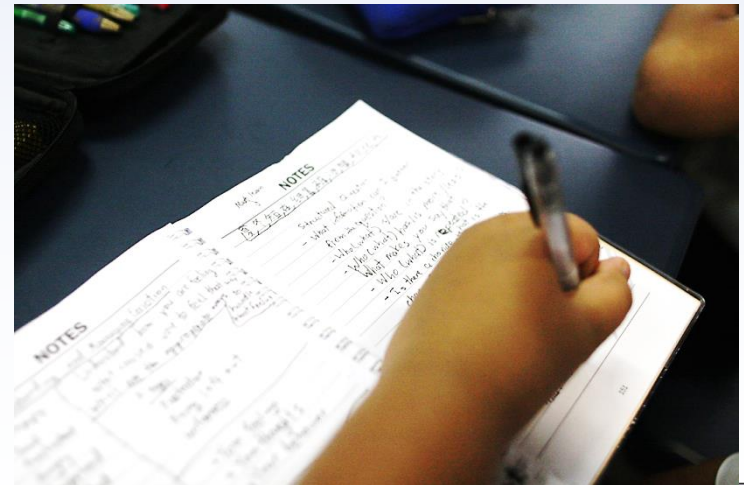


<https://www.koobits.com/>



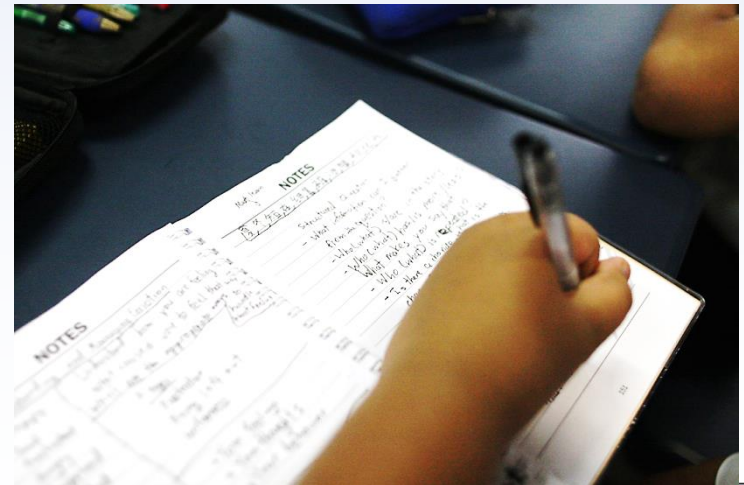
Key Areas of Focus

- Problem-Solving using Heuristics (Video provided)
 - Checking for reasonableness and accuracy
 - Use of Alternative Solutions
 - Creating Questions
 - Identifying Misconception
- Math Language for Communicating and Reasoning
- Math Journaling
(Think and Take notes)



Key Areas of Focus

- Problem-Solving using Heuristics (Teaching Video)
 - Checking for reasonableness and accuracy
 - Use of Alternative Solutions
 - Creating Questions
 - Identifying Misconception
- Math Journaling
(Think and Take notes)



Ways we hope to partner you

Rigor

- Ensure daily practice
- Check their PO
- Get child to explain concepts to you
(encourage mathematical reasoning)



Ways we hope to partner you

Presentation of Work (Neat and Organised)

- Ensure that there are proper steps and equations
- Ensure **proper filing** of Worksheets
- Ensure **corrections are complete (with thorough checking)**



Ways we hope to partner you

- Develop and prepare them the following skills
 - Time Management
 - Exam-taking skills
 - Accuracy
 - Mental Calculation
- Control amount of time spent on computer or video games



THANK YOU

