

MERIDIAN PRIMARY SCHOOL



Nurturing Future Learners, Future Citizens, Future Leaders

11 February 2023

Primary 3 and 4 Mathematics Curriculum Sharing

Building Strong Foundation in Numeracy

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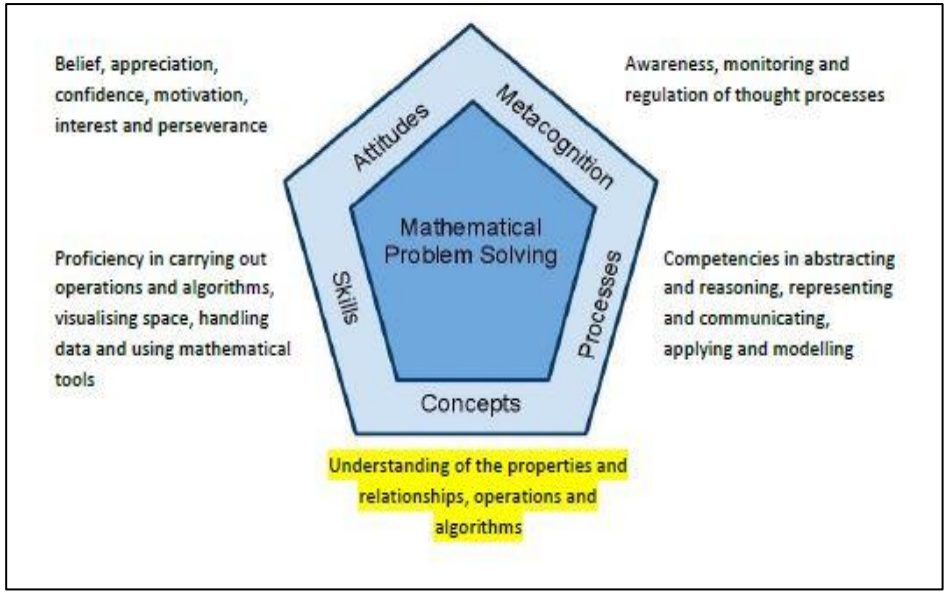
HOD Mathematics

Broad Aims of Primary Mathematics Education

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



Singapore Mathematics Framework, 2021

Importance of Learning Mathematics

- **Mathematics contributes to the development and understanding in many disciplines and provides the foundation for many of today's innovations and tomorrow's solutions.**
- **… underpins many aspects of our everyday activities, from making sense of information around us to making informed decisions about personal finances.**

-Singapore Mathematics Teaching and Learning Syllabus 2021

MPS Mathematics Department

Vision

Enjoy, appreciate Mathematics and use it in everyday life.

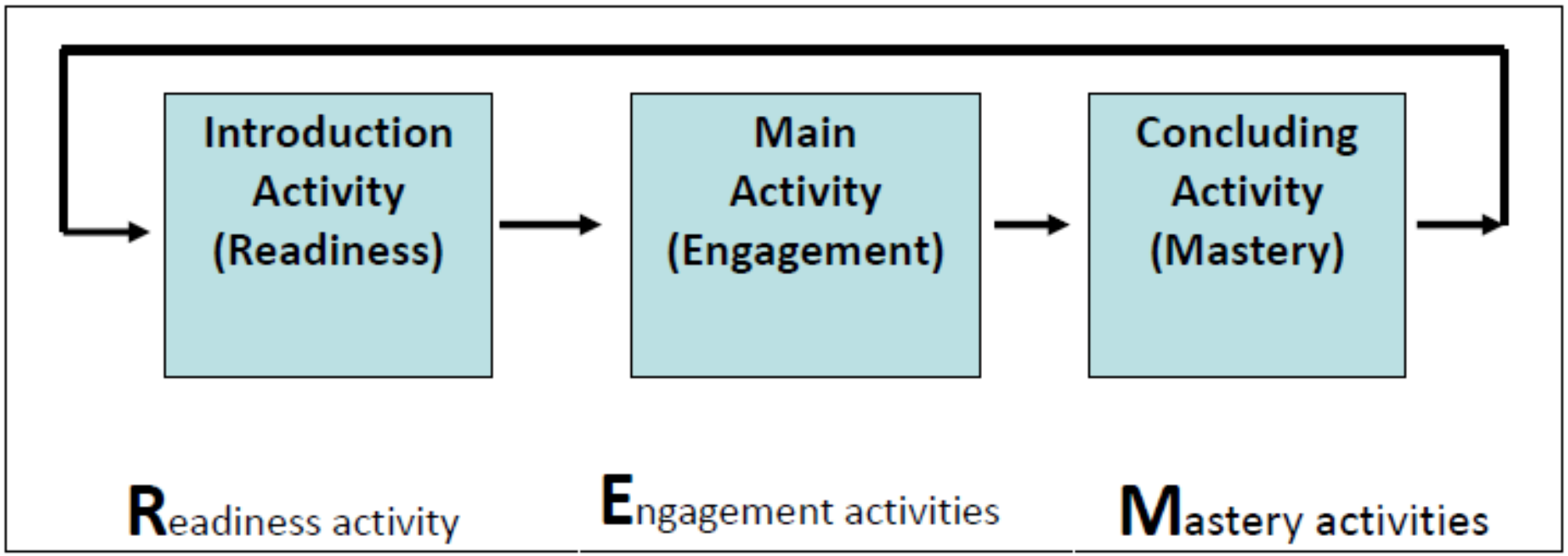
Mission: 3R Approach

Rigorous – A spiral and coherent curriculum with progression in learning objectives.

Responsive – Differentiated approaches to respond to the diverse needs of learners.

Relevant – Motivating context for pupils to learn and see connections of math in their daily lives and real world situations.

Pedagogical Approaches and Strategies



Providing Rich Mathematical Experience

Learning mathematics is beyond just route learning of concepts and skills.

Equally important are the Process Skills and they are learned through carefully constructed Learning Experiences (LE).

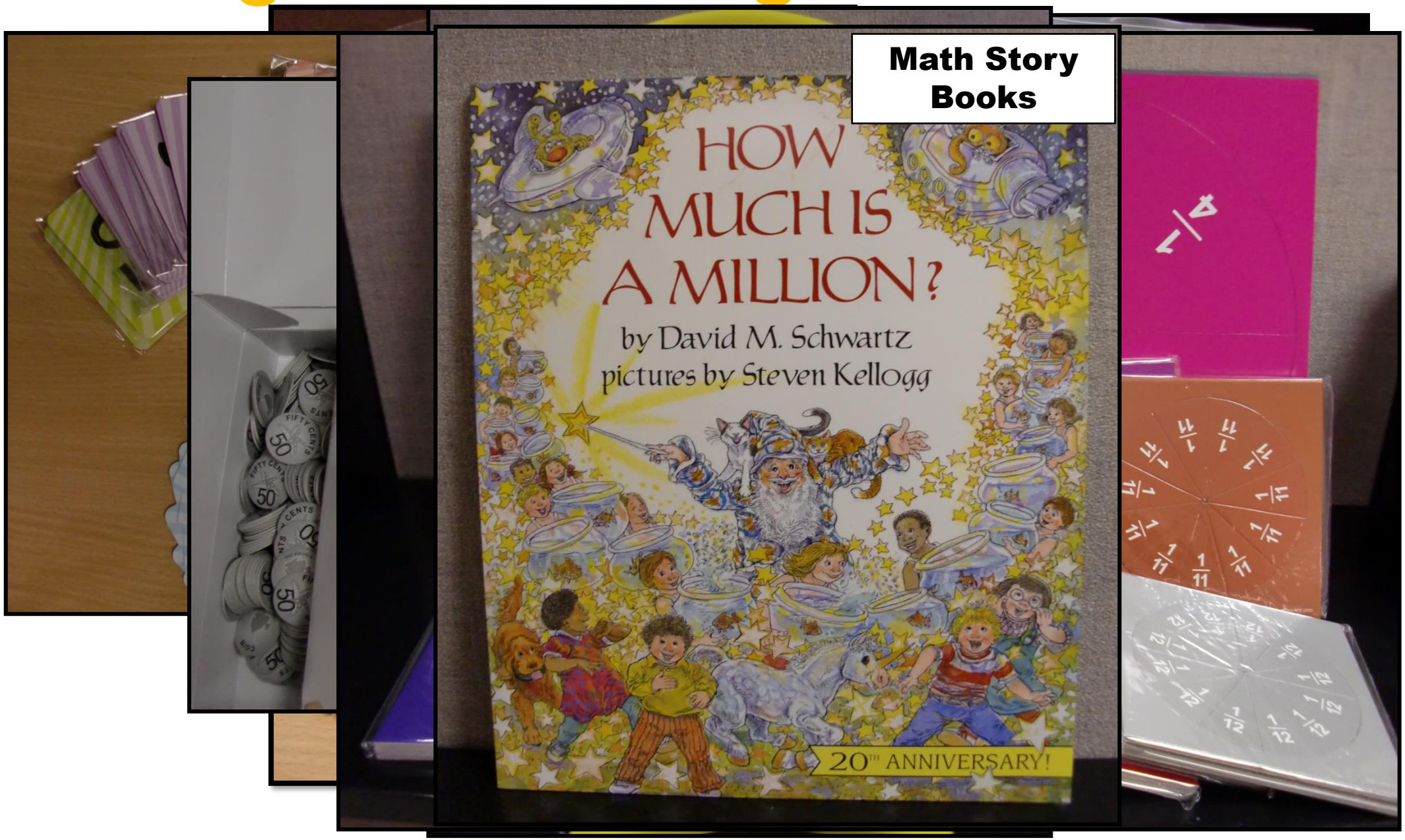
Learning Experiences (LE)

LE provide opportunities for students to:

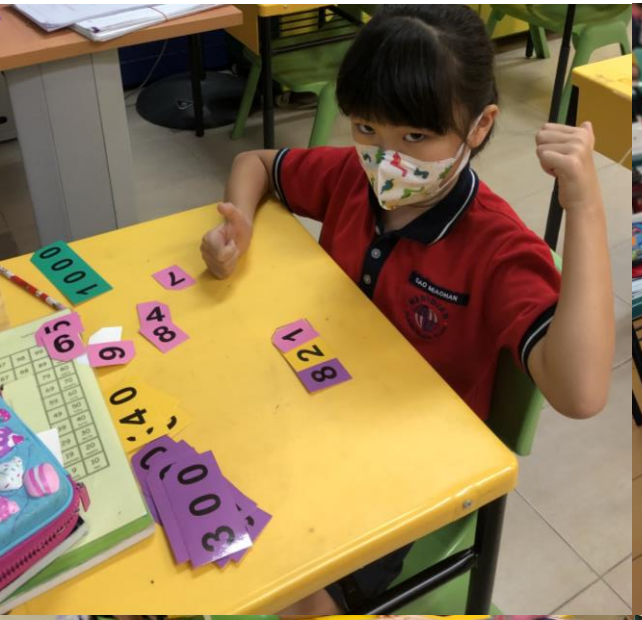
- **Enhance and develop conceptual understanding through use of hands-on learning materials and ICT tools**
- **Apply concepts and skills learnt to solve problems in real-world contexts and to solve non-routine problems**
- **Communicate their reasoning and connections and be engaged in exploratory and metacognitive activities.**
- **Build confidence and foster interest in mathematics**

- Singapore Mathematics Teaching and Learning Syllabus 2021

Teaching and Learning Resources



Providing Rich Mathematical Experience



I AM A YOUNG MPS MATHEMATICIAN (*P2-P5*)

Opportunity to Enrich learning through real-life experiences

Joy Of Learning

MERIDIAN PRIMARY SCHOOL

I AM A YOUNG MATHEMATICIAN CARD

Name: _____ ( )

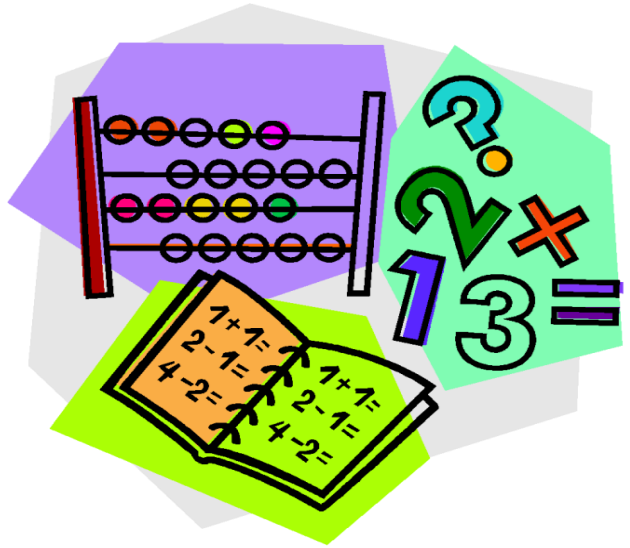
Class: Primary _____ (Math Group: _____)

I AM A YOUNG P5 MPS MATHEMATICIAN

No.	Task (Earn at least 11 Stars)	Star	Date of Completion	Teacher's Signature
1	Use origami paper to create at least 2 symmetric figures.	*		
2	Take photos of real-life examples in decimal notation related to length/ mass/ volume e.g. 3.65kg. Order the pictures in ascending or descending order.	*		
3	Find 5 different real life examples of symmetric figures and present them in pictorial forms. Pupils will need to determine and draw the lines of symmetry in these 5 symmetric figures.	*		
4	Create 2 equations using the four order of operations (+, -, x, ÷) such that the answer is 100.	**		
5	Create a fraction bar chart to show equivalent fractions for $\frac{2}{3}$. (Show at least five equivalent sets)	**		
6	Find the area of the parade square by measuring its length and breadth. (Suggestion: You can use your feet and walk around the perimeter)	**		
7	Draw and cut out squares of different sizes, ranging from 1cm² to 100 cm², using whole numbers only. Paste these squares on an A4 side paper. Label the length and area of each square. What is the relationship between the length of each square and its area?	**		
8	Describe the events of a fun day you had using 24-hour clock, including starting time, finishing time and duration. Represent your schedule in a table form.	***		
9	Plant a green bean seed. Measure the height of the seedling over a period of one month. Represent the data in a spreadsheet (e.g. Excel) and construct a line graph using the spreadsheet.	***		
10	Work in pairs. Look for a newspaper article showing supermarket items on sale and cut it out. Imagine you and your partner are given $100. Choose suitable items that you can buy with $100 such that the amount left is as little as possible. Cut out the items that you chose from the newspaper article and paste it on an A4 paper. You may also present your working on your A4 paper.	***		
	TOTAL STARS COLLECTED			
	DATE SUBMITTED:			

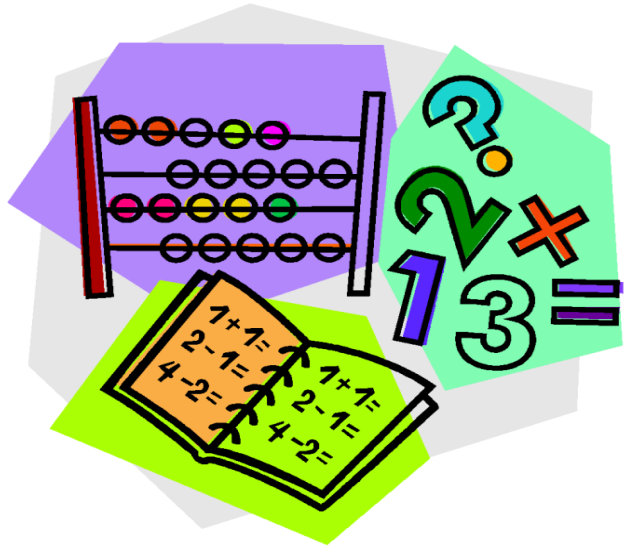
P3 Mathematics Concepts and Skills

Numbers	Measurement and Geometry	Statistics
• Numbers up to 10 000 • Fractions	• Length • Mass • Volume • Time • Money • Area and Perimeter • Angles and Lines	• Bar Graphs



P4 Mathematics Concepts and Skills

Numbers	Measurement and Geometry	Statistics
• Numbers up to 10000 • Fractions • Decimals	• Area and Perimeter • Time • Angles • Square • Rectangle • Symmetry	• Bar Graph



KEY MATH PROGRAMMES

P3	P4
• REMEDIAL • LSM/ICAN • YOUNG MATHEMATICIAN CARD • EXPERIENTIAL MATH ENRICHMENT • TEACH PROGRAMME (SINDA)	• REMEDIAL • ICAN • EXCELLENCE 2000 (E2K) • YOUNG MATHEMATICIAN CARD • MATH OLYMPIAD PROGRAMME • TEACH PROGRAMMME (SINDA)

Mathematics (Primary 3)

Topics	Term 1	Term 2 (15%)	Term 3 (15%)	Term 4 (70%)
Whole Numbers • Numbers up to 10 000 • Addition & Subtraction • Multiplication & Division **Fractions** • Equivalent Fractions • Comparing and Ordering Fractions • Addition & Subtraction **Money** **Measurement** • Length, Mass and Volume • Time **Area and Volume** • Area and Perimeter **Geometry** • Angles • Perpendicular & Parallel Lines **Data representation and interpretation** • Bar Graphs	**Week 9: Wednesday** **Duration: 45 min** **Topical Review 1 (30 Marks)** • Whole Numbers - Numbers up to 10 000 - Addition & Subtraction • Money	**Week 9: Wednesday** **Duration: 45 min** **Topical Review 2 (30 Marks)** • Whole Numbers • Data representation and interpretation • Angles	**Week 9: Wednesday** **Duration: 45 min** **Topical Review 3 (30 Marks)** • Length, Mass & Volume • Fractions • Geometry	**Semestral Assessment 2 (50 marks)** • Whole Numbers • Fractions • Money • Measurement • Area and Volume • Geometry • Data representation and interpretation Section A: MCQ (10 marks) Section B: Short Answer Questions (26 marks) Section C: Word Problems (14 marks)

Mathematics (Primary 4)

Topics	Term 1	Term 2 (15%)	Term 3 (15%)	Term 4 (70%)
Whole Numbers • Numbers to 100 000 • Factors/Multiples • Four Operations **Fractions** • Mixed Number & Improper Fractions • Addition & Subtraction of Fractions • Fraction of a set of objects **Geometry** • Angles • Squares and Rectangles • Symmetry **Measurement** • Area and Perimeter • Time **Decimals** • Decimals up to 3 decimal places • Four Operations of Decimals **Data Analysis** • Tables and Graphs	**Week 9: Tuesday** **Duration: 45 min** **Topical Review 1 (30 Marks)** • Whole Numbers	**Week 9: Tuesday** **Duration: 45 min** **Topical Review 2 (30 Marks)** • Whole Numbers • Fractions • Geometry	**Week 9: Tuesday** **Duration: 45 min** **Topical Review 3 (30 Marks)** • Whole Numbers • Fractions • Decimals	**Semestral Assessment 2 (100 Marks)** • Whole Numbers • Fractions • Geometry • Measurement • Decimals • Data Analysis Section A: MCQ (24 marks) Section B: Short Answer Questions (44 marks) Section C: Word Problems (32 marks)

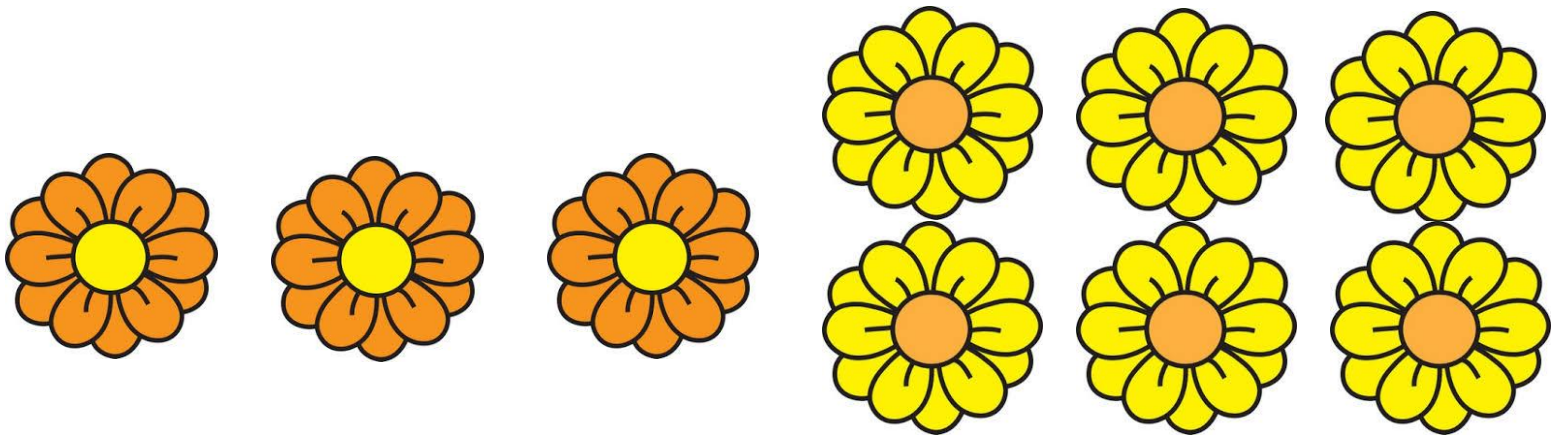
Concrete-Pictorial-Abstract

What is Concrete-Pictorial-Abstract?

- **Concrete (“Doing”)**
  - Use of manipulatives
- **Pictorial (“Seeing”)**
  - Constructing a picture/diagram/model
- **Abstract (“Symbolic”)**
  - Conceptualize or visualize the math behind the concrete and pictorial using equations

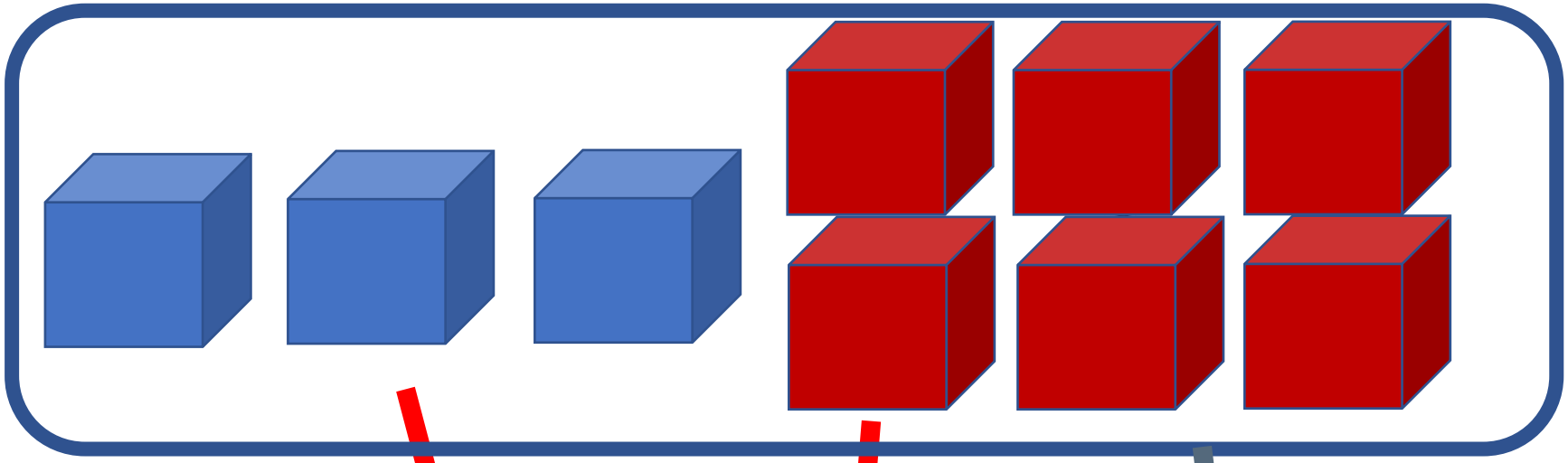
Addition using Part & Whole (PPW)

How many flowers are there?



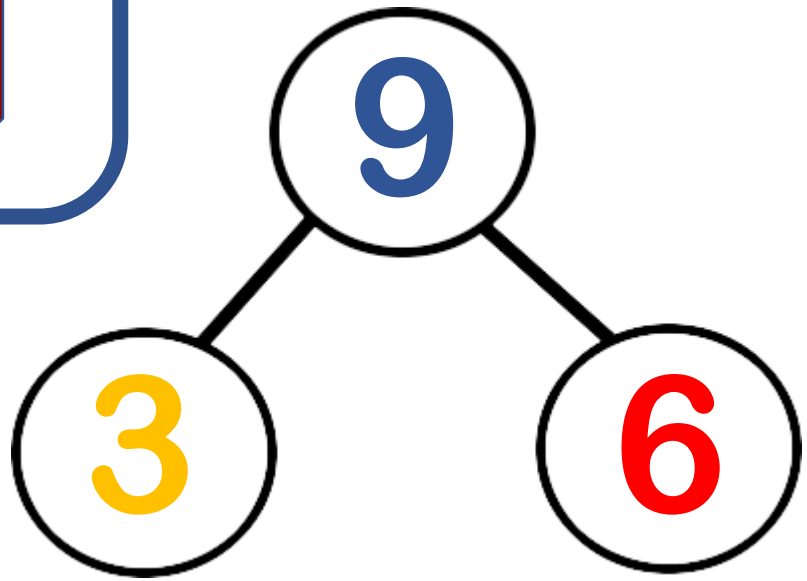
Addition using Part & Whole (PPW)

How many flowers are there?



3 + 6 = 9

Part Part whole



Concrete-Pictorial-Abstract

Model Drawing

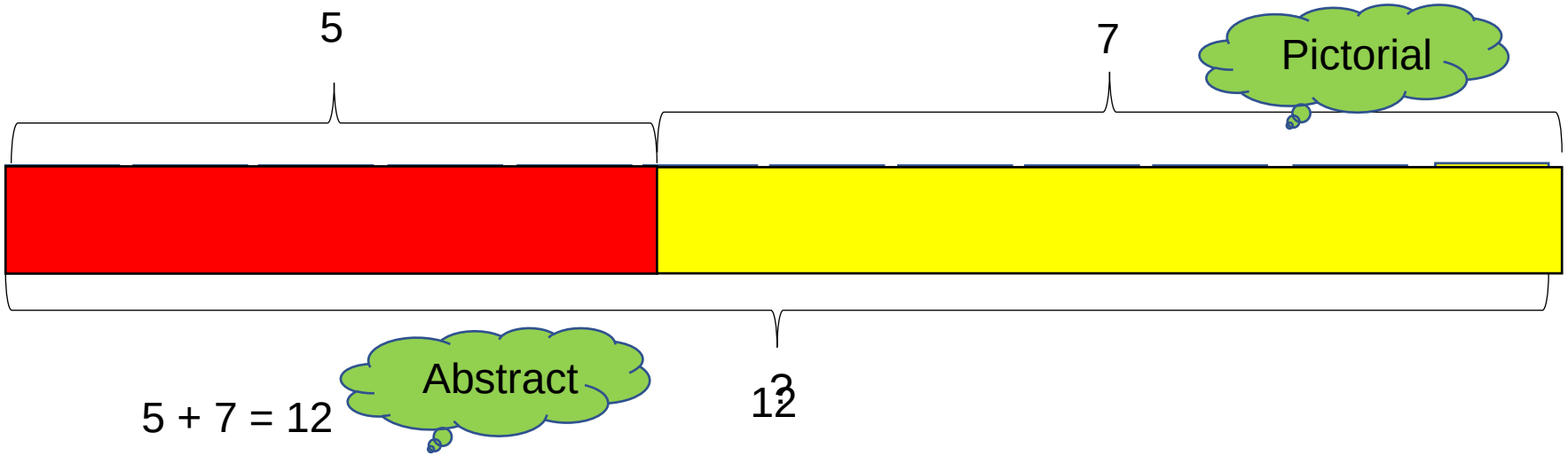
Part-Whole Model

- 1-Step Word Problem (Addition)

John ate 5 cookies in the morning.
He ate 7 cookies in the afternoon.
How many cookies did he eat altogether?

Part-Whole Model

John ate 5 cookies in the morning.
He ate 7 cookies in the afternoon.
How many cookies did he eat altogether?



Ans: **12 cookies**

What are Heuristics?

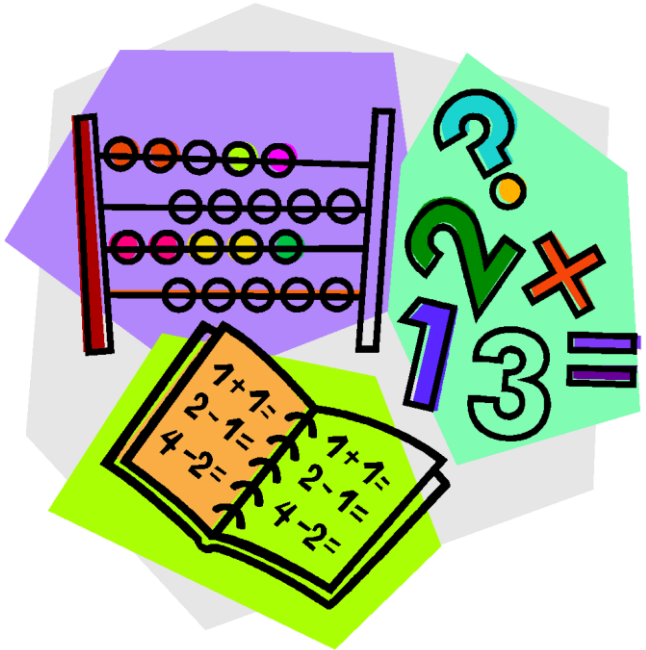
- They are methods and strategies that can be helpful in problem solving. (Bruner 1960)

- They are different problem-solving strategies that can help us solve unfamiliar or non-routine math problems.

Background

- Curriculum Planning and Developing Division (CPDD) and Ministry of Education Singapore (MOE), have identified thirteen heuristics that are applicable to mathematical problem solving.

- 1. Act it out
- 2. Use a diagram/model
- 3. Use guess-and-check
- 4. Make a systematic list
- 5. Look for patterns
- 6. Work backwards
- 7. Use before-after concept
- 8. Make suppositions
- 9. Restate the problem in another way
- 10. Simplify the problem
- 11. Solve part of the problem
- 12. Think of a related problem
- 13. Use equations
- **(Heuristics 12 and 13 are not in the primary syllabus.)**



Heuristics	P1	P2	P3	P4	P5	P6
Patterns	*	*	*	*	*	*
Draw a Diagram *	*	*	*	*	*	*
Listing		*	*	*	*	*
Act It Out	*	*	*	*	*	*
Before-after			*	*	*	*
Working Backwards		*	*	*	*	*
Guess and Check				*	*	*
Make Suppositions/Assumptions					*	*
Restate the Problem					*	*

* Draw a diagram includes : Model drawing, cutting and stacking, gaps and difference