

# P5 PARENTS' WORKSHOP MATHEMATICS

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14 July 2017





# Overview

- Expectation of Curriculum and Assessment
  - ❖ Syllabus
  - ❖ Examination Format
  - ❖ Assessment Objectives
- School support
- Ways we hope to partner you

# Syllabus



The **overall arching goal** of mathematics curriculum is to

- (i) ensure that all students will **achieve a level of mastery of mathematics that will serve them well in life**, and
- (ii) for **those who have the interest and ability, to pursue mathematics at the highest ability.**

# Syllabus



The **broad aims** of mathematics education are to enable students to;

- (a) **acquire** and **apply** mathematical concepts and skills;
- (b) **develop** cognitive and **metacognitive** skills through a mathematical approach in **problem solving**; and
- (c) **develop** positive attitudes towards mathematics.

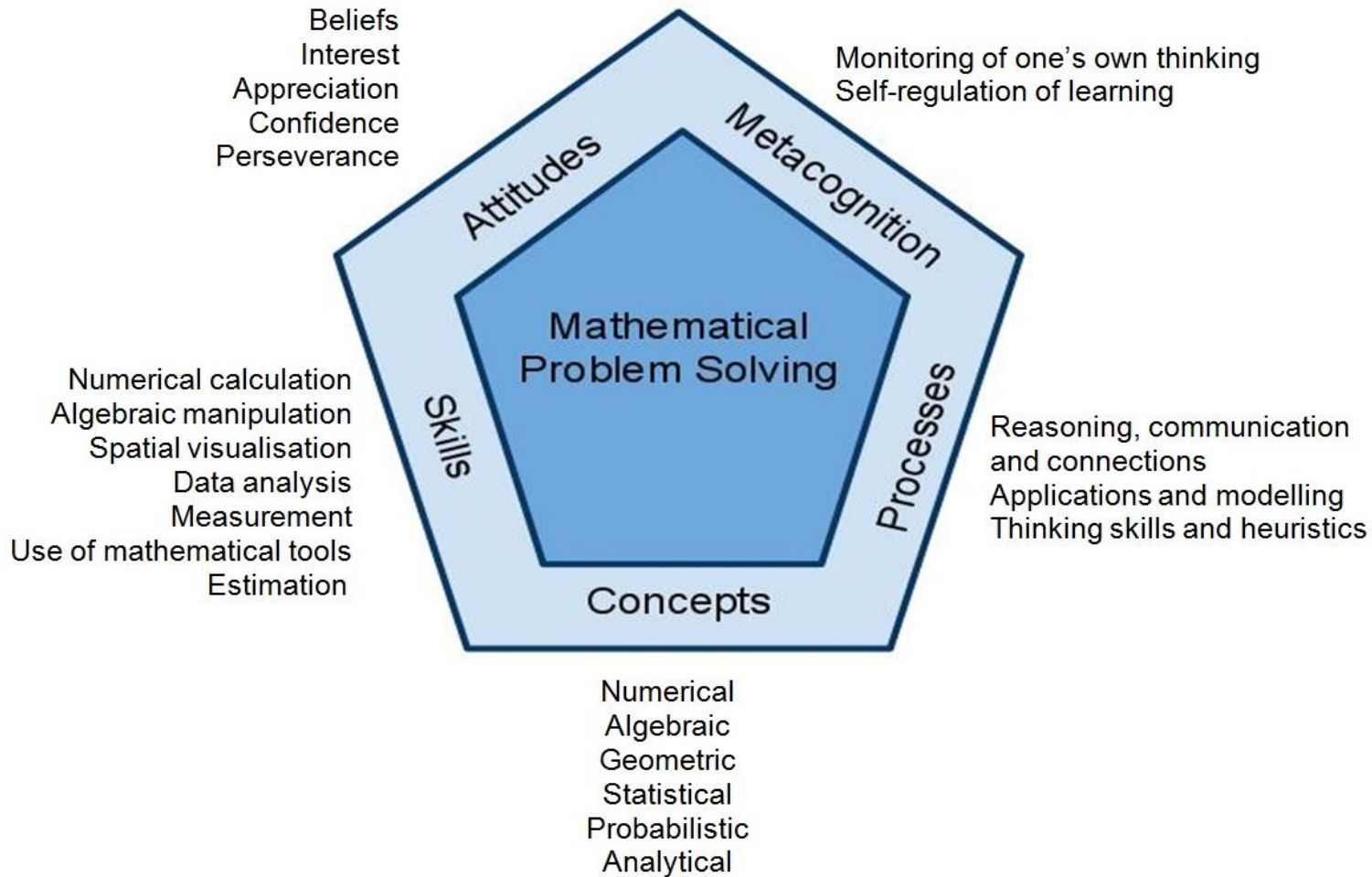
# Syllabus



The **broad aims** of **primary mathematics education** are to enable all students to;

- (a) **acquire and apply** mathematical concepts and skills for **everyday use** and continuous learning in mathematics;
- (b) **develop** thinking, **reasoning**, **communication**, **application** and **metacognitive skills** through a **mathematical approach** in **problem solving**; and
- (c) **build confidence** and **foster interest** in mathematics.

# Mathematics Framework



# Mathematics Concepts and Mathematics Skills



## Mathematical reasoning

- refers to the **ability** to **analyse mathematical situations** and **construct logical arguments**.
- It is a **habit of mind** that can be **developed through application of mathematics in different contexts**.

# Mathematics Concepts and Mathematics Skills



## Mathematical Communication

- Communication refers to the **ability to use mathematical language** to **express mathematical ideas** and **arguments precisely, concisely and logically**.
- It helps students develop their understanding of mathematics and sharpen their mathematical thinking.



# Mathematics Concepts and Mathematics Skills



## Mathematics Connections

- Connections refer to the ability to see and make linkages among mathematical ideas, between mathematics and other subjects, and between mathematics and the real world.
- This helps students make sense of what they learn in mathematics.

# Mathematical Strands (At P5 & 6)



The syllabus is organised along 3 content strands with a listing of mathematical processes that cut across the 3 strands.

3 Content Strands + 1 Process Strand		
Number and Algebra	Measurement and Geometry	Statistics
Mathematical Processes		

# Mathematical Strands (At P5)



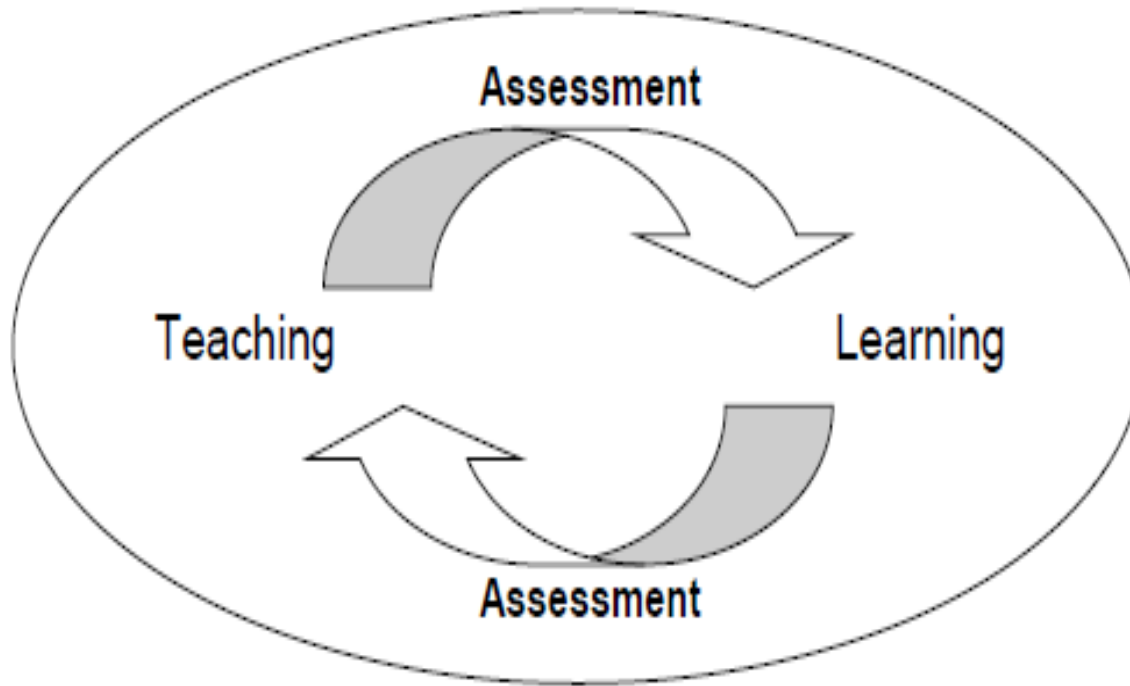
Strand / Sub-Strand	Topics
Numbers / Whole Numbers	Numbers to 10 million 4 Operations Word Problems
Numbers / Whole Numbers	Fractions and Decimals Ratio Percentage Rate
Measurement	Area and Perimeter (Triangles and Composite Figures) Volume
Data Analysis	Average
Measurement & Geometry	Angles Triangles

# Mathematical Strands (At P6)



Strand / Sub-Strand	Topics
Numbers / Whole Numbers	Numbers to 10 million 4 Operations Word Problems <b>Algebra</b>
Numbers / Whole Numbers	Fractions and Decimals Ratio Percentage Rate
Measurement	Area and Perimeter (Triangles and Composite Figures) Volume <b>Circles</b>
Data Analysis	Average <b>Pie Chart</b>
Measurement & Geometry	Angles Triangles

# Assessment Format (P5 and P6 Standard Math & Foundation Math)



# PSLE Assessment Format (P5 and P6 Standard Math & Foundation Math)



## Primary 5 Standard Mathematics (To be implemented from the Year of PSLE Examination 2018)

### Examination Format

This examination consists of two written papers comprising three booklets.

Both papers will be scheduled on the same day. There is a break between Paper 1 and Paper 2.

- Paper 1 comprises two booklets. The use of calculators is not allowed.
- Paper 2 comprises one booklet. The use of calculator is allowed.

# PSLE Examination Format (Standard and Foundation)



- **Paper 1** does not allow the use of a calculator so the important computational skills will continue to be emphasized and be assessed.
- It is basically a test on speed and accuracy.
- **Paper 2** allows pupils the use of calculators to solve problems.
- This is the paper where students will be expected to show detailed working, step-by-step.
- Pupils will take both papers on the same day with a break in between.

# PSLE Examination Format 2018 (Foundation Mathematics)

New



Paper Type	Booklet	Item Type	No of Questions	No. of marks per Question	Total Marks	Duration
1 (Use of Calculators is <b><u>NOT allowed</u></b> )	A	Multiple Choice Questions (MCQ)	10	1	10	1 hour
			10	2	20	
	B	Short Answer Questions	10	2	20	
	<b>Total for Paper 1</b>		<b>30</b>		<b>50</b>	
2 (Use of Calculators <b><u>IS allowed</u></b> )	There is only 1 Booklet)	Short Answer Questions (SAQ)	10	2	20	1 hour
		Long Answer Questions (LAQ)	6	3 or 4	20	
	<b>Total for Paper 2</b>		<b>16</b>		<b>40</b>	
<b>Total</b>			<b>46</b>		<b>90</b>	



# PSLE Examination Format 2018 (Standard Mathematics)

New



Paper Type	Booklet	Item Type	No of Questions	No. of marks per Question	Total Marks	Duration
1 (Use of Calculators is <b><u>NOT allowed</u></b> )	A	Multiple Choice Questions (MCQ)	10	1	10	1 hour
			5	2	10	
	B	Short Answer Questions	5	1	5	
			10	2	20	
	<b>Total for Paper 1</b>			<b>30</b>		
2 (Use of Calculators <b><u>IS allowed</u></b> )	There is only 1 Booklet)	Short Answer Questions (SAQ)	5	2	10	1h30min
		Long Answer Questions (LAQ)	12	3,4,5	45	
	<b>Total for Paper 2</b>			<b>17</b>		
<b>Total</b>			<b>47</b>		<b>100</b>	

# Assessment Objectives (PSLE)

New



Students should be able to:

- **A01:** Able to **recall** mathematical facts, concepts, rules and formulae and **perform straight forward computations**.
- **A02:** To **interpret** information and **apply** mathematical concepts and skills in a **variety of contexts**.
- **A03:** To **reason** mathematically; **analyse**, **make inferences** and **select appropriate strategies** to **solve problems**.

# Samples of Questions



Find the value of  $5 \div 8$ .

Express your answer as a decimal.

Round off 70.171 to the nearest tenth.

- (1) 70
- (2) 70.1
- (3) 70.2
- (4) 70.17

Taken from  
PSLE Booklet  
(Standard Math)

# Samples of Questions



The total cost of a pen and a book is \$32. The cost of the pen is  $\frac{3}{5}$  the cost of the book. What is the cost of the book?

What is the price of the watch after adding 7% GST?




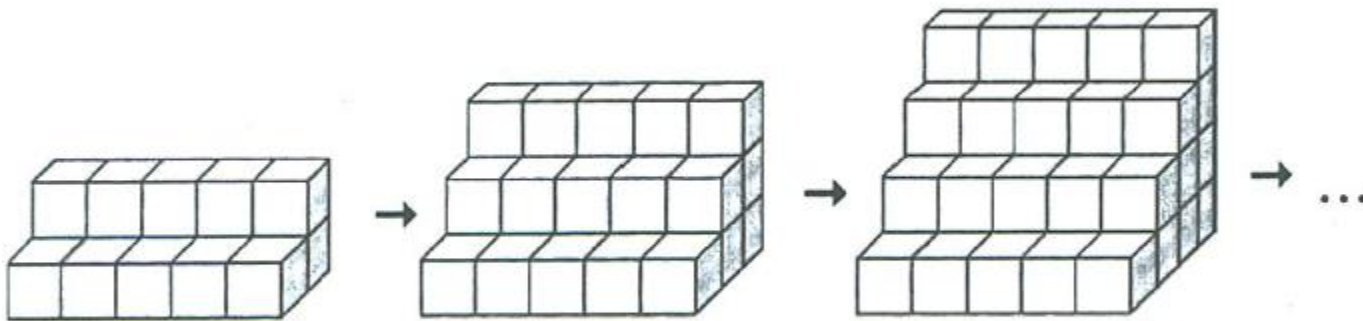
\$30  
(Price before GST)

Taken from  
PSLE Booklet  
(Standard Math)

# Samples of Questions



Meng wanted to build a set of steps with 1-cm cubes (  ). The figures below show how he built the steps, from a height of 2 cm to 3 cm to 4 cm.



If Meng continued building the steps in this way, what would be the height of the set of steps that had 140 cubes?

Taken from  
PSLE Booklet  
(Standard Math)

# What have we observe?



## Topics that students find challenging

- Fractions
- Decimals (Conversions are taught in Semester 2)
- Percentage\* (New topic at P5)
- Ratio\* (New topic at P5)

## Problem Solving

- Ignore the text, focus only on the numbers
- Lack of planning when approaching a non-routine word problem
- Unclear presentation – due to the lack of planning
- Not attempting the problem at all

# How does the school support?



## 1. Ensure our students build a strong foundation

- Use of manipulative and daily life experiences to help your child **understand** basic concepts and skills
- Use of repeated and motivated practices to help them **master** the concepts and skills



# How does the school support?



## Ensure our students build a strong foundation

- Help our students understand and see the **connections across topics** – will help them **retain knowledge better**.

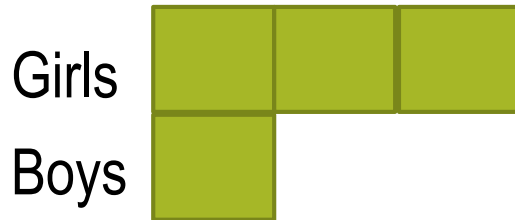


# How does the school support?



## Example

There are 3 times as many girls as boys in a class.



$\frac{3}{4}$  of the class are girls and  $\frac{1}{4}$  of them are boys.

The number of boys is  $\frac{1}{3}$  of the number of girls.

The ratio of the number of girls to the number of boys is 3 : 1.

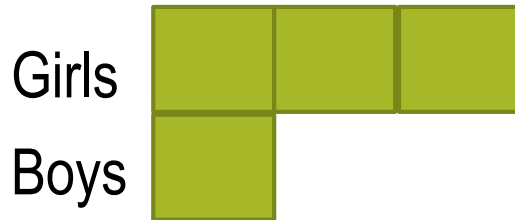
75% of the class are girls and 25% of them are boys.

# How does the school support?



## Example

There are 3 times as many girls as boys in a class.



Whole Number

$\frac{3}{4}$  of the class are girls and  $\frac{1}{4}$  of them are boys.

Fraction

The number of boys is  $\frac{1}{3}$  of the number of girls.

The ratio of the number of girls to the number of boys is 3 : 1.

Ratio

75% of the class are girls and 25% of them are boys.

Percentage

# How does the school support?



## 2. Help our students develop problem-solving skills

- Individual time to solve problems before collaboration.
- Make a routine/non-routine/complex problem 'digestible'.
- Exposure to various problem-solving strategies (heuristics)  
Encourage the use of more than one approach to solve the problem.
- Exposure to problems that require spatial visualisation.

# How does the school support?



## 3. Approach to help reluctant problem-solver

- Make the problem 'digestible' and making their thinking visible

**R**ead each sentence.

**A**sk questions

**G**enerate information

**W**rite down the information

# How does the school support?



**Approach to help reluctant problem-solver**

**Make the problem 'digestible' and their thinking visible**

In a school, 70% of the members in the Band and 60% of the members in the Choir are girls. Both the Band and the Choir have the same number of boys. The Band has 20 more girls than the Choir.  
How many members are there in the Band?

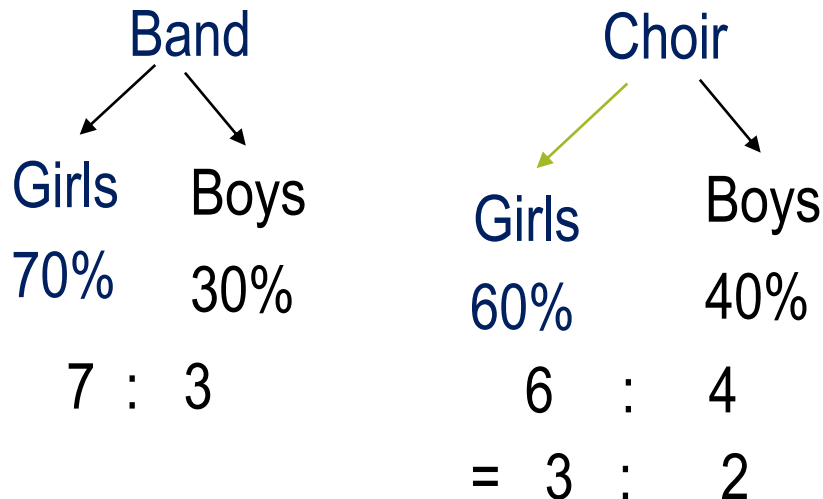
# How does the school support?



Approach to help reluctant problem-solver

Make the problem 'digestible' and their thinking visible

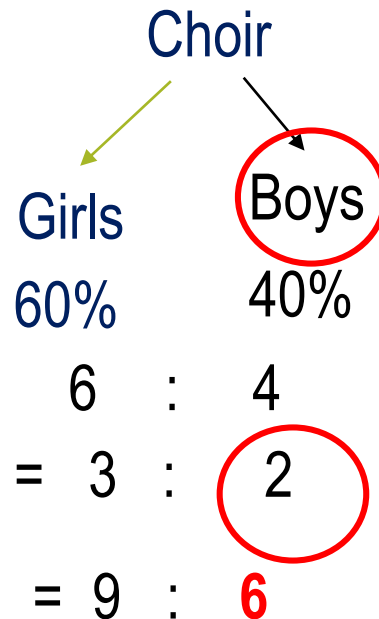
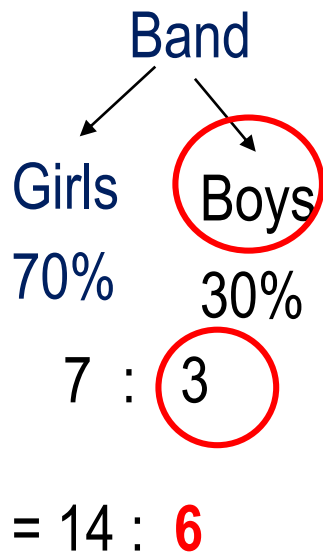
In a school, 70% of the members in the Band and 60% of the members in the Choir are girls. Both the Band and the Choir have the same number of boys. The Band has 20 more girls than the Choir. How many members are there in the Band?



# How does the school support?



In a school, 70% of the members in the Band and 60% of the members in the Choir are girls. **Both the Band and the Choir have the same number of boys.** The Band has 20 more girls than the Choir. How many members are there in the Band?

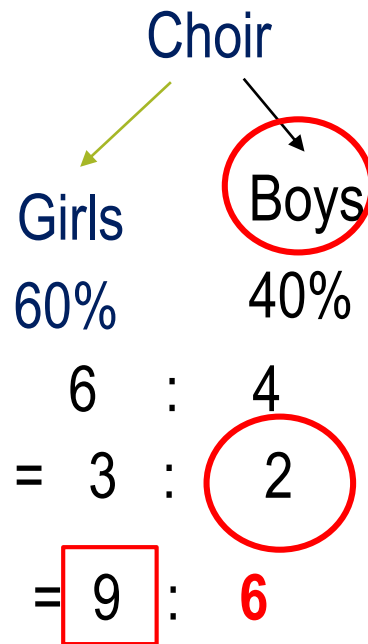
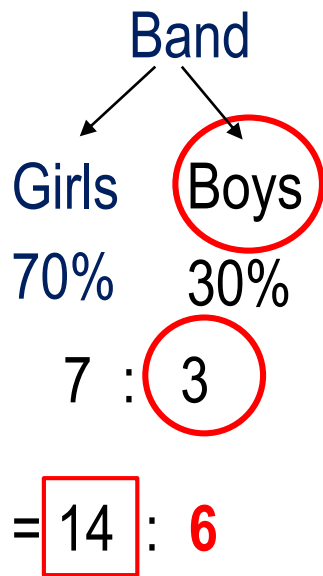


# How does the school support?



In a school, 70% of the members in the Band and 60% of the members in the Choir are girls. Both the Band and the Choir have the same number of boys. **The Band has 20 more girls than the Choir.**

How many members are there in the Band?



$$14 - 9 = 5 \text{ units}$$
$$5 \text{ units} = 20$$

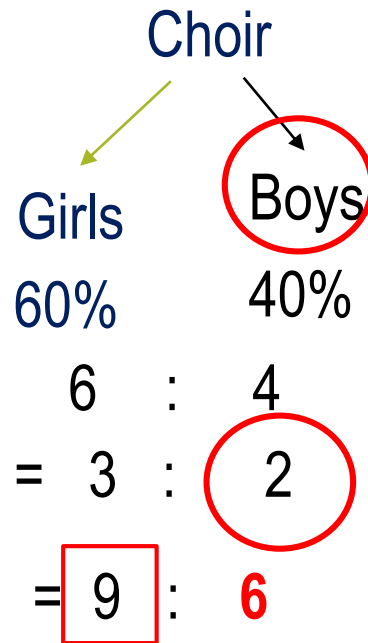
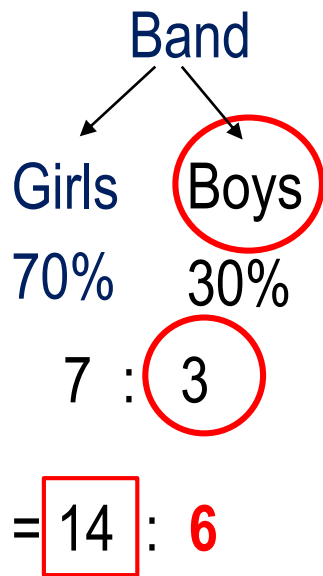


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How many members are there in the Band?



$$14 - 9 = 5 \text{ units}$$
$$5 \text{ units} = 20$$

$$14 + 6 = 20 \text{ units}$$
$$20 \text{ units} = 20 \times 4$$
$$= 80$$

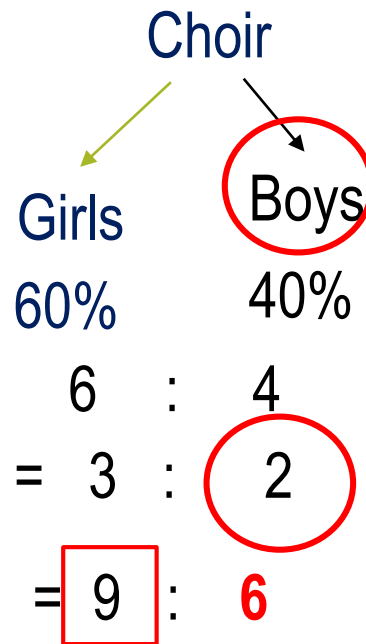
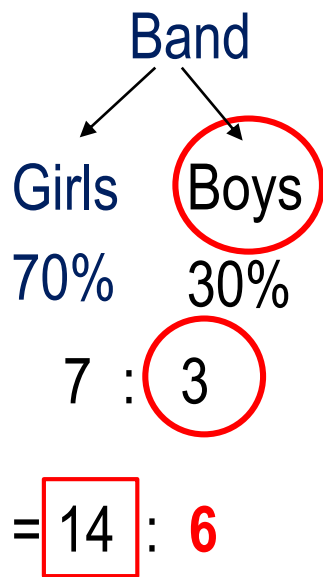
**This approach will help the students track their thinking, present their work systematically and gain method marks.**

# How does the school support?



In a school, 70% of the members in the Band and 60% of the members in the Choir are girls. Both the Band and the Choir have the same number of boys. The Band has 20 more girls than the Choir.

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$$5 \text{ units} = 20$$

$$14 + 6 = 20 \text{ units}$$
$$20 \text{ units} = ??$$

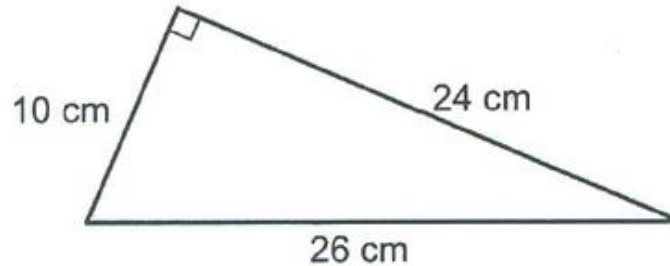
**This approach will help the students track their thinking, present their work systematically and gain method marks.**

# How does the school support?



## 4. Exposure to problems that require spatial visualisation

The figure shows a right-angled triangle.



- (a) Find the area of the triangle.
- (b) Dinesh wants to cut such triangles from a rectangular piece of cardboard 60 cm by 100 cm. At most, how many of such triangles can he cut?

Taken from  
PSLE Booklet  
(Standard Math)

# How does the school support?



a)  $\frac{1}{2} \times 10 \times 24 = \underline{120\text{cm}^2}$

**Ans. 120cm<sup>2</sup>**

b) 2 such triangles can form a rectangle of length 24cm and breadth 10cm.

No. of lengths of the rectangle that can be cut along the length of the cardboard

$$100 \div 24 = 4 \text{ R } 4\text{cm}$$

No. of breadths of the rectangle that can be cut along the breadth of the cardboard

$$60 \div 10 = 6$$

No. of rectangles that can be cut from the cardboard

$$6 \times 4 = 24$$

$$24 \times 2 = \underline{48}$$

**Ans. 48 triangles**

Taken from  
PSLE Booklet  
(Standard Math)

# How does the school support?



## Learning Experiences to help students improve in spatial visualisation – Hands-on experiences

- To manipulate and visualise 2-D and 3-D figures in different orientations
- To form figures using basic shapes, e.g. triangle, rectangle, etc.
- To figure out the basic shapes from a given figure
- To build 3-D solids using cubes
- To draw it out

# How does the school support?



## Exposure to problem-solving strategies, e.g. model drawing

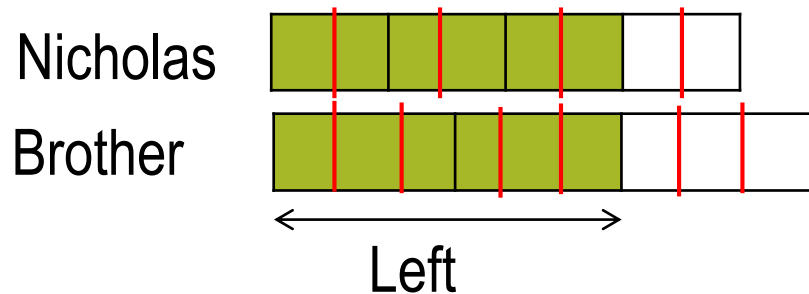
Nicholas and his brother had \$850 altogether. When Nicholas spent  $\frac{1}{4}$  of his money, and his brother spent  $\frac{1}{3}$  of his money, they had the same amount of money left.

# How does the school support?



Exposure to problem-solving strategies, e.g. model drawing

Nicholas and his brother had \$850 altogether. When Nicholas spent  $\frac{1}{4}$  of his money, and his brother spent  $\frac{1}{3}$  of his money, they had the same amount of money left.

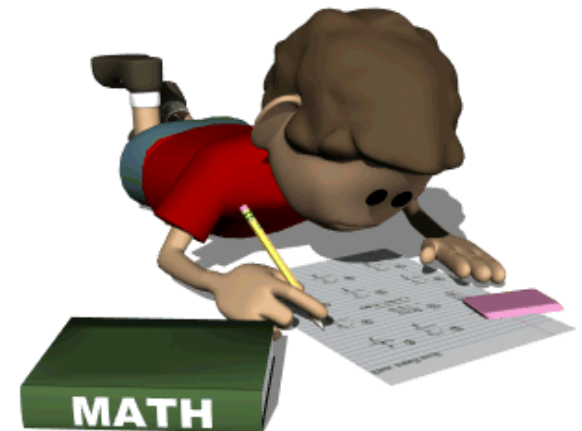


17 units = \$850

# Ways we hope to partner you



- Involve your child in your daily activities to see Math round them, e.g. grocery shopping, baking, posting of articles, etc.
- Ensure your child master his/her computations facts well
- Ensure your child present his/her work systematically and clearly
- Ensure your child do his/ her corrections and learn from mistakes
- Ensure your child spend time to revise what they have learnt
- Encourage your child to persevere even if the task is difficult





THANK  
YOU

