

# Parents Coffee Morning

Linton Williams  
25/02/15

## Singapore Maths

**‘Improving Thinking Skills in Maths’**

# We encourage all teachers to do the following...

- encourage children to estimate (make a sensible guess) before calculating an answer
- give children the opportunity to decide if a calculation can be done in their head or whether they need to use a written method.
- encourage children to check their answer to see if it is sensible.
- Encourage children to practice their multiplication facts at the appropriate level until they know them by heart.
- Acknowledge strategies that children may have

## Continue...

- encourage children to use the expression “number equation”
- during problem solving always encourage children to write the answer as a number sentence.
- Instructional, guided and discovery learning

Actions to be taken during lesson	Teacher/Adult	Students/Pupils
<b>I DO/INSTRUCTIONAL</b>	<ul style="list-style-type: none"> <li>❖ Provides direct instruction</li> <li>❖ Establishes goals and purpose</li> <li>❖ Models</li> <li>❖ Think aloud</li> </ul>	<ul style="list-style-type: none"> <li>❖ Actively listens</li> <li>❖ Takes notes</li> <li>❖ Asks for clarification</li> </ul>
<b>WE DO/ GUIDED</b>  <b>Pupil: pupil</b> <b>Adult: pupil</b>	<ul style="list-style-type: none"> <li>❖ Interactive instruction</li> <li>❖ Works with students</li> <li>❖ Checks, prompts, clues</li> <li>❖ Provides additional modelling</li> <li>❖ Meets with needs-based groups</li> </ul>	<ul style="list-style-type: none"> <li>❖ Asks and responds to questions</li> <li>❖ Works with teacher and classmates</li> <li>❖ Completes process alongside others</li> </ul>
<b>YOU DO/DISCOVERY</b>  <i>independent</i>	<ul style="list-style-type: none"> <li>❖ Provides feedback</li> <li>❖ Evaluates</li> <li>❖ Determines level of understanding</li> </ul>	<ul style="list-style-type: none"> <li>❖ Works alone</li> <li>❖ Relies on notes, activities and classroom learning to complete task</li> <li>❖ Takes full responsibility for outcome/SA</li> </ul>
<p>In addition, as a classroom practitioner, I work in a collaborative way with my TA and children.</p> <p>3/17/2015</p>	<ul style="list-style-type: none"> <li>❖ Moves among groups</li> <li>❖ Clarifies misunderstanding</li> <li>❖ Provides support</li> </ul> <p>Linton Williams Leader of Mathematics</p>	<ul style="list-style-type: none"> <li>❖ Works with classmates, shares outcome</li> <li>❖ Collaborates on authentic task</li> <li>❖ Consolidates learning</li> <li>❖ Completes process in small group</li> <li>❖ Looks to peers for clarification</li> <li>❖ PA</li> </ul>

# Times Tables

## Year 2

2 times table  
5 times table  
10 times table

## Year 3

2 times table  
3 times table  
4 times table  
5 times table  
6 times table  
10 times table

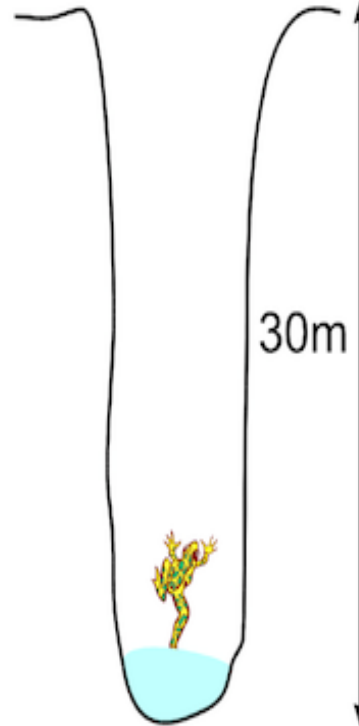
## Year 4

2 times table  
3 times table  
4 times table  
5 times table  
6 times table  
7 times table  
8 times table  
9 times table  
10 times table  
11 times table  
12 times table

## Year 5 & 6

Know by heart all multiplication facts  
up to  $12 \times 12$

**A frog has fallen into a pit  
that is 30m deep.**



**Each day the frog climbs 3m,  
but falls back 2m at night.  
How many days does it take  
for him to escape?**

3/17/2015

# Mathematics Education should help children to...

- Acquire and apply skills and knowledge relating to numbers, measurement and space in real life situations.(Concepts)
- Develop the ability to make logical deduction and induction as well as to explain their mathematical thinking and reasoning through problem solving.(Skills/Processes)
- Develop positive attitudes towards Mathematics including confidence, enjoyment and perseverance.( Attitude)

# HEURISTICS IN MATHEMATICS

- ❖ Guidelines or strategies
- ❖ Tools

...to increase the probability/chances of solving a mathematical word problem

There is no fixed heuristics for any one problem.



# SOME HEURISTICS FOR PROBLEM SOLVING

- ◆ Use a diagram/model
- ◆ Make a systematic list
- ◆ Look for a pattern
- ◆ Work backwards
- ◆ Use before –after model
- ◆ Restate the problem in another way
- ◆ Simplify the problem
- ◆ Solve part of the problem
- ◆ Visualization

## TRY THIS PROBLEM

In how many different ways  
can we put 5 (**five**) letters into  
5 (**five**) different envelopes?

# SOLUTION

## Step 1: understand the problem

Find the total number of ways to put 5 letters into 5 different envelopes

## Step 2: Make a plan

Make a systematic list of the 5 letters and envelopes

## Step 3: Solve

Look for the pattern by listing the total number of letters and envelopes

# Work In booklet

I do

Instructional

We do

Guided

You do

Discovery

# Samples of work done

Learning Objective - To begin to use bar models to solve simple word problems  
26.9.2014

MUST	SHOULD	COULD
I must read and understand the problem.	I should be able to use bar models to solve problems	I should record my results/solutions in a clear way and write a number sentence to show it.

$4 \times 12 = 48 + 12 = 60$   
 $2 \text{ units} = 42 + 18 = 60$   
 Simon has 60 dollars ✓

$2 \text{ units} = 26$   
 $1 \text{ unit} = 26 \div 2 = 13$   
 $4 \times 13 = 52 + 8 = 60$   
 $5 \text{ units} = 65$   
 $1 \text{ unit} = 65 \div 5 = 13$   
 $8 \times 13 = 104 + 12 = 116$  ✓  
 Kendan has 116

$3 \text{ units} = 72$   
 $1 \text{ unit} = 72 \div 3 = 24$   
 $5 \times 24 = 120 + 13 = 133$   
 Sarah has 133 ✓

# Continue ...

3.6 kg 

10	10	10	10	10	10
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 \$18

4 kg 

10	10	10	10
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 \$42

Simon has \$90.

$$20 = 42 - 18 = 24$$

$$10 = 24 \div 2 = 12$$

$$4 \times 12 = 48 + 42 = 90 \quad \checkmark$$

Teacher	TA	PA	SA
What Went Well (WWW)	✓ You are learning to use bar models to solve problems.		
Who did it well?	• Continue to use bars to help you solve word problems.		
Pupil Response (green pen)	↓ I will use bars in other problems to help working out.		

**Please finish at home...**

**Feel free to ask for support if you need to**

**Thank you**