

Singapore Math: Strategies That Work

FDLRS Fall Forum '08

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Singapore Math

- What is Singapore Math?
 - often it refers to strategies common to Singapore classrooms
 - or it might describe the full math program used in Singapore

- Why are Singapore Math strategies being used by so many American teachers and schools?
 - Singapore is an international leader in math.

- What is the TIMSS Report?
 - Trends in International Mathematics and Science Study
 - Singapore's 4th & 8th grade students have scored first for Mathematics in 1995, 1999, and 2003.

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Singapore Math

Strengths are.....

- strong number sense, mental-math skills, and deep understanding of place value

- concrete-pictorial-abstract learning sequence

- cover fewer topics in-depth and taught to mastery

- use of Heuristic problem solving strategies, especially 'model drawing' or 'bar modeling'

- sees problem solving as the purpose of math

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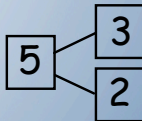
Place Value, Computation, & Number Sense

- counting- objects, pictures, number lines, skip counting
- how many are in the set, numbers before or after
- what number is 20 more than, less than, after, before (using tens)

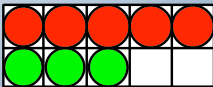
Singapore Math

Place Value, Computation, & Number Sense

- number bonds



- ten frames



Singapore Math














Use of Place Value Materials

- Base-10 blocks
- Place value charts
- Place value disks
- Place value cards










hundreds	tens	ones

- *Follow a logical order when teaching operations
- no renaming
- with renaming

Place Value Disks

 tens	ones 
 	  
$\begin{array}{r} 38 \\ -15 \\ \hline \end{array}$ 	    

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thousands	hundreds	tens	ones
	 		 

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Place Value Strips

0	1	2	3	4	6	7	8	9		
(1	2	3	4	5	(7	8	0	
(1	2	3	5	6	7	8	9	0	0
6	4	9	5							

COOL! Place Value
http://www.teachertube.com/view_video.php?viewkey=951074cf0914d79c1299
 Very visual demonstration of place value; has no language.

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Place Value Strips



Expanded Form

Word Form

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Place Value, Computation, & Number Sense

Branch method:

•no renaming

$12 + 7$

•with renaming

$5 + 8$

$14 + 21$

$13 + 48$

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Place Value, Computation, & Number Sense

Branch method:

•no renaming

$48 - 13$

•with renaming

$32 - 14$

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Place Value, Computation, & Number Sense

Addition using Left-to-Right method:

$$22 + 14$$

$$(20 + 10) + (2 + 4)$$

$$30 + 6 = 36$$

Addition using (part-part-whole) or

$$4 + 12 =$$

?	
4	12

Subtraction (whole-part-part):

$$16 - 4 =$$

16	
4	?

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Problem Solving Using Model Drawing

Model Drawing Steps:

1. **Read** the problem
2. Decide '**who**' is involved
3. Decide '**what**' is involved
4. **Draw** a unit bar to model each variable
5. **Read** each sentence, one at a time
6. Put the '**question mark**' in place
7. **Work** your computation
8. **Answer** the question in a complete sentence

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Problem Solving Using Model Drawing

Addition

Kate read 2 books. She also read 3 magazines. How many books and magazines did she read altogether?

discrete

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Singapore Math *Addition*
Problem Solving Using Model Drawing

Kate read 2 books. She also read 3 magazines. How many books and magazines did she read altogether?

Milking it for all it's worth!
•How many more magazines than books did Kate read?
•If Kate wanted to read 4 books, how many more would she need to read?

continuous

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Singapore Math *Subtraction*
Problem Solving Using Model Drawing

Bob had 14 baseball cards. He gave 5 away and kept the rest for himself. How many cards did Bob have left for himself?

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Singapore Math *Multiplication*
Problem Solving Using Model Drawing

Kay has 3 plates of cupcakes. There are 4 cupcakes on each plate. How many cupcakes does Kay have altogether?

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Problem Solving Using Model Drawing

Division

Nada has 8 marbles in her backpack. If she takes them out and divides them into 4 equal groups, how many marbles will be in each group?

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"There is no art to Singapore--
only your art."
--Patsy F. Kanter

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