April 4th, Thursday

11:00 a.m

I have 2 times as many coins as .

1:30 p.m.

Chris' Journal

I need these to buy ......

page **6**

Solving Advanced Word Problems Using Bar Model Method
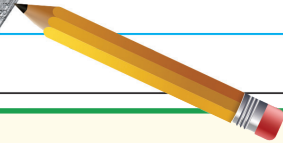
page **9**

Empowering Students through Journal Writing in Math Classroom

April 5th, Friday

11:00 a.m.

Type of Pastry Sold

doughnut

croissant

cream puff

cupcake

0 5 10 15 20 25 30 35 40 45 50

number of pastries

3:00 p.m.

A class has 14 boys.

The number of boys is 5 less than the number of girls.

Draw models for the story.
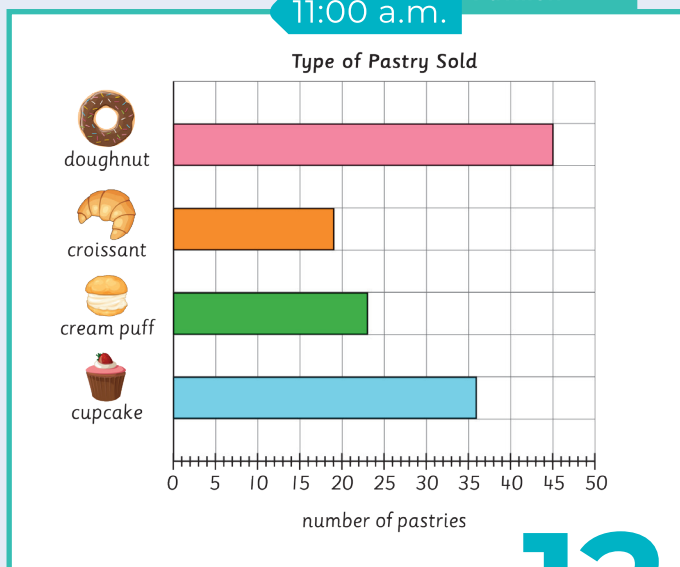
page **12**

How to Create Rich Anchor Tasks

page **15**

Empowering Students with Five Key Competencies in Math

2

BACKGROUND AND HISTORY OF SINGAPORE MATHEMATICS

Until the 1980's, Singapore students performed poorly in mathematics.

	1970s	1980s	1990s	2000s
500s	Japan	Hong Kong, Japan & Korea	Hong Kong, Japan, Korea & Singapore	Hong Kong, Japan, Korea & Singapore
400s	Thailand	Philippines, Singapore & Thailand	Malaysia & Thailand	Malaysia & Thailand
300s			Indonesia & Philippines	Indonesia & Philippines

Source: Hanusek, Jamison, Jamison & Woessmann, 2008

Back then, rote memorization, rote procedures and tedious computations were the bane of mathematics learning in Singapore and the rest of Southeast Asia. The low performance was the impetus for a reform in mathematics teaching and learning in Singapore.

In the 1980's, what is now called Singapore Mathematics was researched by the Curriculum Development Institute of Singapore (CDIS) and introduced to Singapore schools. It was formally introduced to the system in 1992 and has since been revised in 2001, 2007 and 2013.

The Singapore system has come a long way. In the most recent TIMSS (Trends in International Mathematics and Science Study), an international benchmarking study, the proportion of Grade 4 and Grade 8 students in the so-called Advanced International Benchmark was way above the international average.

think! **MATHEMATICS** is a series of books adapted from the New Syllabus Primary Mathematics series that has been approved by the Ministry of Education in Singapore (MOE). It is adapted from approaches used in Singapore, which emphasize the use of problem solving, and is specially designed to engage students so that they are able to build a solid foundation in mathematics.

Written in accordance with extensively-researched approaches used in Singapore, it adopts a spiral design with the integration of the concrete-pictorial-abstract (C-P-A) approach, careful variation and the use of problem solving, which are integral features of the learning process.

Based on time-tested learning theories, this series incorporates the use of concrete manipulatives and group work. In think! **MATHEMATICS**, these features are exemplified throughout the series:

Chapter Opener

Illustrates a situation, often familiar, that serves as an introduction for students.

Anchor Task

Provides opportunities for students to develop essential ideas related to the lesson objective through exploration. Each is also designed to allow teachers to extend the learning of advanced learners.

Let's Learn

Scaffolds conceptual development and provides opportunities for reading and reflection. It also encourages students to develop an inquisitive mindset towards learning.
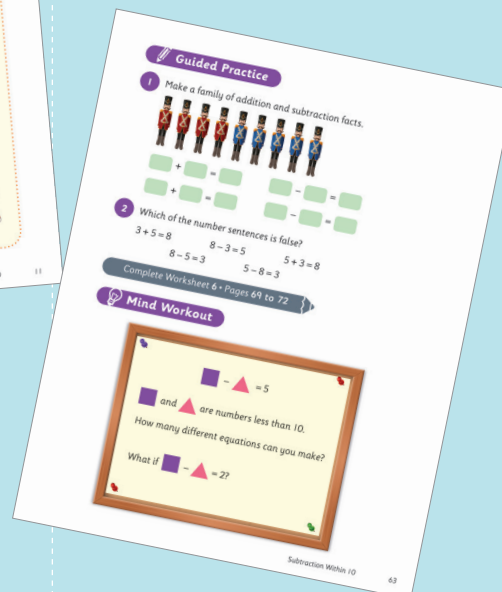
4

Activity Time

Provides students with opportunities to practice learned skills through collaborative activities and games.

Guided Practice

Comprises questions for further consolidation and for immediate assessment of students' learning.
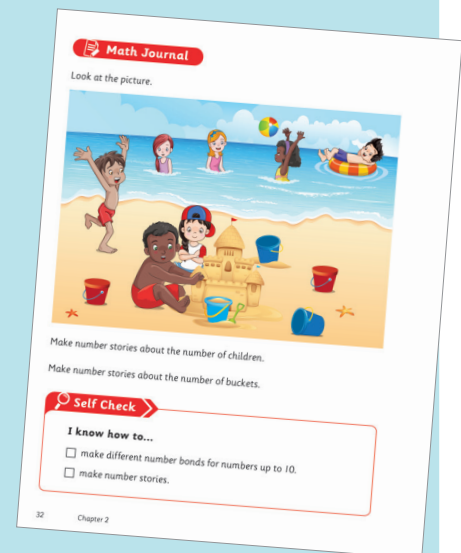
Math Journal

Provides students with opportunities to write and to communicate mathematical ideas.

Mind Workout

Requires students to work on challenging and non-routine tasks to develop higher-order thinking skills through the use of problem-solving heuristics.

Self Check

Allows students to assess their own learning.
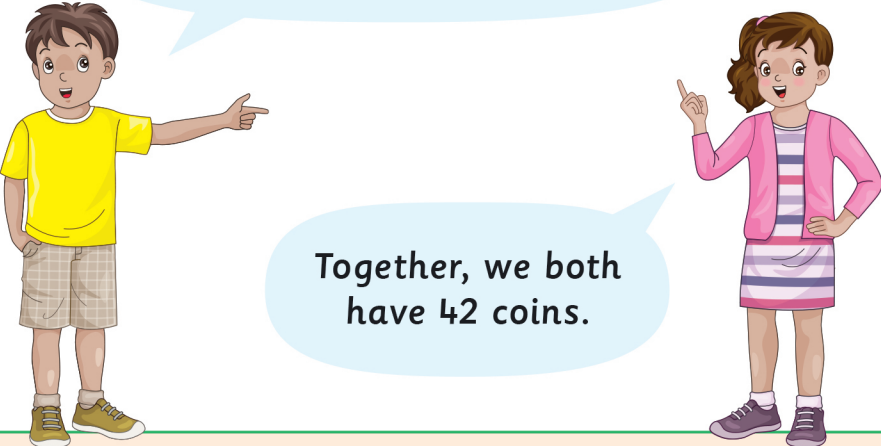
Solving Advanced Word Problems Using Bar Model Method
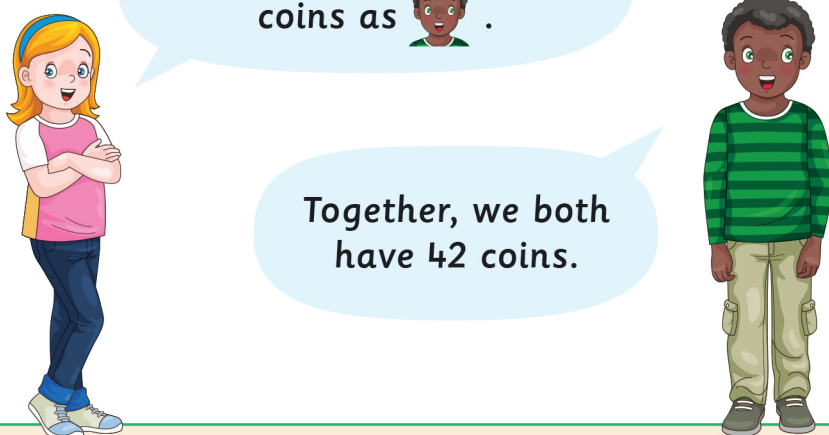
⚓ Anchor Task

I have 2 more coins than 👧 .

Together, we both have 42 coins.

I have 2 times as many coins as 👦 .

Together, we both have 42 coins.

Draw bar models for each situation.
How are they different?

I can draw a diagram for a situation.

How do we transition to using letters to stand for an unknown?

⚓ Anchor Task

used $\frac{3}{4}$ of his building blocks, used $\frac{2}{3}$ of her building blocks and used $\frac{1}{3}$ of his building blocks. Each child used the same number of building blocks. Together, they had 1050 building blocks.

What questions can be answered?

Level 1 Question

Level 2 Question

Level 3 Question

CASE STUDY 3 **Empowering Students through Journal Writing in Math Classroom**

Mind Workout

Some digits are given.

| 1 | 3 | 4 | 5 | 7 | 8 |

Use the digits to form two 2-digit numbers.
Subtract the numbers.
Show your work on   .

tens	ones
−	

How can we make the answer as big as possible?

Descriptive prompt

Creative prompt

Evaluative prompt

Investigative prompt

9

Math Journal

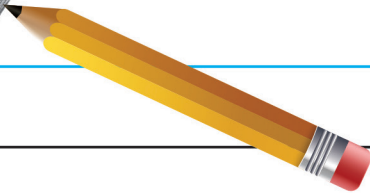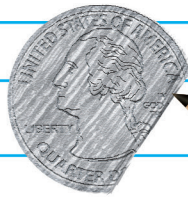74 cents

CHOCOLATE 84 cents

56 cents

68 cents

Trace the coins needed to buy your favorite snack.

Chris' Journal

○ I need these to buy......

○

📝 Math Journal

Show in your journal the number of different rectangles and squares that you can

make using .

and   are the same rectangle.

_____

_____

_____

_____

_____

_____

11

⚓ *Anchor Task*

Explain how each of them subtracts.

$678 - 402 = $ ▢

$600 - 400$ $78 - 2$

$678 - 399 = $ ▢

$678 - 400$

$402 - 399 = $ ▢

399   400   401   402

$800 - 678 = $ ▢

$799 - 678$

⚓ Anchor Task

$2.69 each box
7.4 oz. (210 g) 6 pieces

$2.49 each loaf
680 g 24 oz.

Cereal
$2.99 each box

MILK
1 gallon
$2.99 each gallon

Trail Mix
almonds cashews cranberries
1 lb.

sliced cheese
12 oz.
$3.99 each

$2.29 each dozen

Roast beef
8 oz.

25¢ each

Lemonade
64 fl oz.
$2.69 each bottle
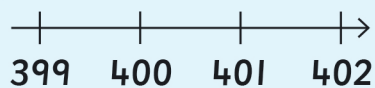
MILK
1 quart
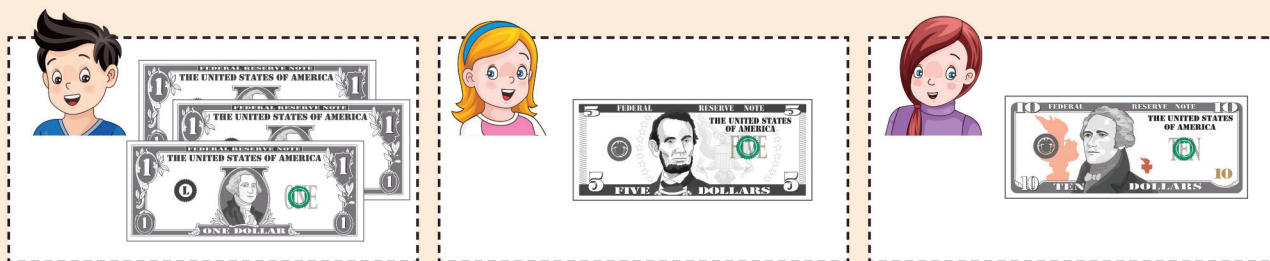
The 1-gallon milk costs $1.80 more than the 1-quart milk.
The trail mix costs $1 more than the roast beef.
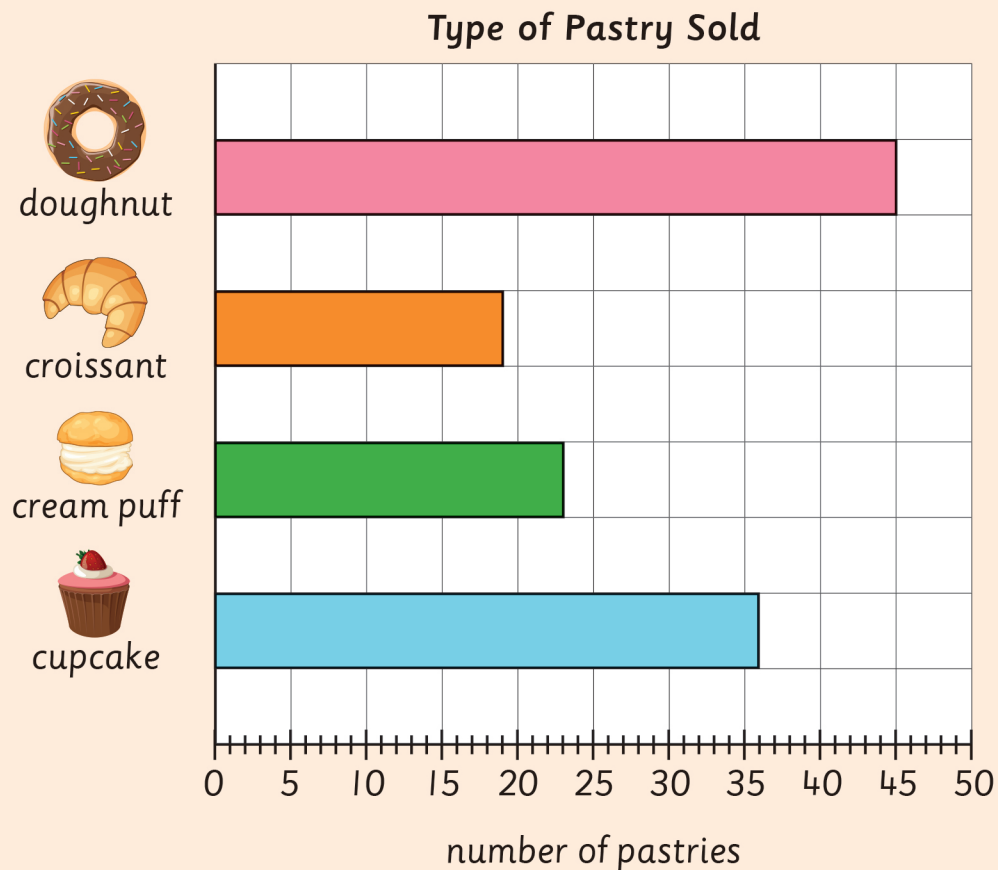Together, the trail mix and roast beef cost $10.98.

Which items can each of them buy?

⚓ Anchor Task ▶

Different types of pastry are sold at a bakery each day.
The baker draws a bar graph to show the number of each type of pastry he sold in one day.

Type of Pastry Sold

doughnut

croissant

cream puff

cupcake

number of pastries

Ask five questions that can be answered using information in the bar graph.

Empowering Students with
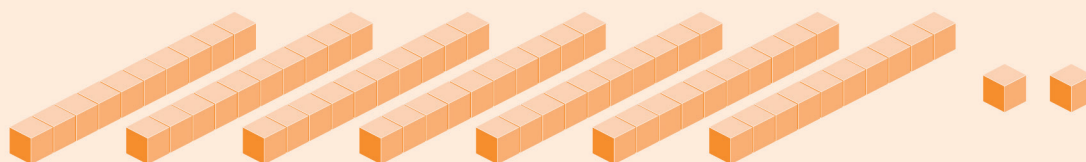# Five Key Competencies in Math

Anchor Task

How many cupcakes are there?

Think of ways to find out.

There are 72 cubes.
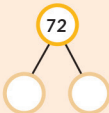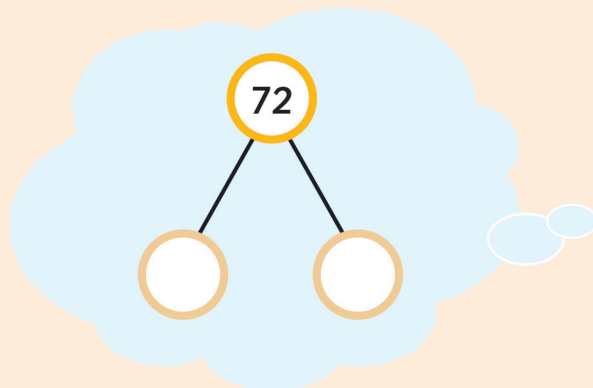
Show 72 using (72) in as many ways as possible.

72

72 = [ ] + [ ]

Mind Workout

Is it possible to use $\boxed{1}$ $\boxed{2}$ $\boxed{3}$ $\boxed{4}$ $\boxed{5}$ $\boxed{6}$ $\boxed{7}$ $\boxed{8}$ $\boxed{9}$ to make a correct addition equation?

Use any 7 digit cards.

Use any 8 digit cards.

Math Journal

Explain how you can find the total of many numbers easily.

| 3 | + | 5 | + | 7 | + | 9 |

Janet's Journal

I use drawings.

Li Na's Journal

First, I ......

Then, I ......

I use words.

You can explain in different ways.

Robert's Journal

3 + 7 = 10

I use calculations.

🔦 Mind Workout

👧 , 👦 , and 🧒 share 30 pieces of candy.

👧 gets 2 more candies than 👦 .

🧒 gets 2 fewer candies than 👦 .

How many pieces of candy does each person get?

📝 Math Journal

Look at the sentences below.

Draw models for the story.

A class has 14 boys.

The number of boys is 5 less than the number of girls.

Write two questions that can be answered using the information given.

PROFESSIONAL
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We offer a wide range of professional development courses to support educators during their teaching journey. Concept-based courses and content-based courses are specially designed and conducted by experts in Mathematics education to provide educators with a greater insight into the fundamentals of Mathematics instruction and the confidence to deliver effective lessons in the classroom.

Primary Mathematics

Concept-Based Courses

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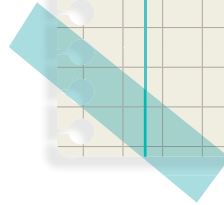|	
PMC1001	Key Learning Theories for the Teaching and Learning of Primary Mathematics
PMC1002	Effective Lesson Planning for High Quality Learning
PMC1003	Learning Mathematics through Reasoning and Communication
PMC1004	Using Heuristics to Solve Challenging Problems
PMC1005	Use of Model Method in Problem Solving
PMC1006	Summative Assessment - An Integral Component of Learning and Teaching

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PMC1105	Teacher as a Reflective Practitioner through Lesson Study

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PMC1205	Teaching of Measurement
PMC1206	Teaching of Statistics

For further details, please visit
www.think-mathematics.com/training/professional-development

Thank you

Notes

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_____
_____
_____
_____

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