

Great Valley K-5 Math Curriculum Revisions



**A CLOSER LOOK AT THE SINGAPORE MATH
PHILOSOPHY AND FRAMEWORK**

Pennsylvania Common Core Math Standards

Three overlapping semi-circles of increasing size, all facing right, are positioned on the left side of the page. They are rendered in a reddish-brown color with a dashed white outline. The largest semi-circle is at the top, the medium one in the middle, and the smallest at the bottom.

Content Standards

Standards for Mathematical Practices

Focus on students as strong mathematicians and problem solvers

Timeline for Math Curriculum Revision Process



- **2011-2012 School Year**

- K-12 Curriculum Committee formed
- Gained deeper understanding of the Common Core Standards for Mathematics
- Identified necessary changes to GVSD curriculum and instruction

- **Spring/Summer 2012**

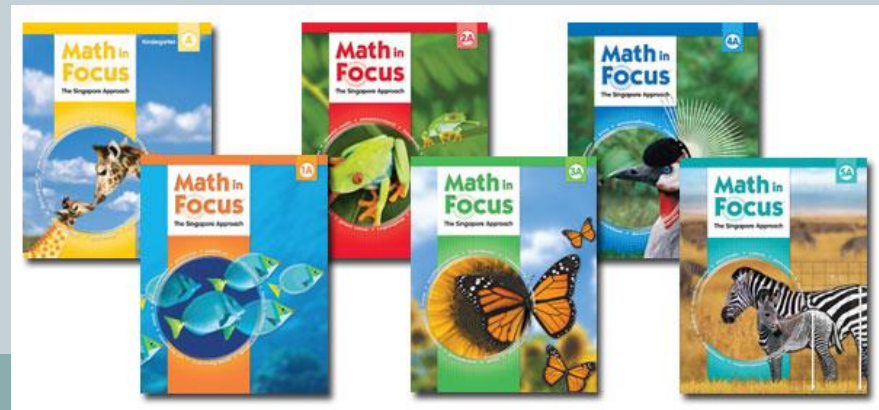
- Pre-Algebra, Algebra 1, and Geometry teachers continued to meet to revise these three course curricula to prepare for administration of the Keystone Exams

Timeline for Math Curriculum Revision Process



- **2012-2013 School Year**

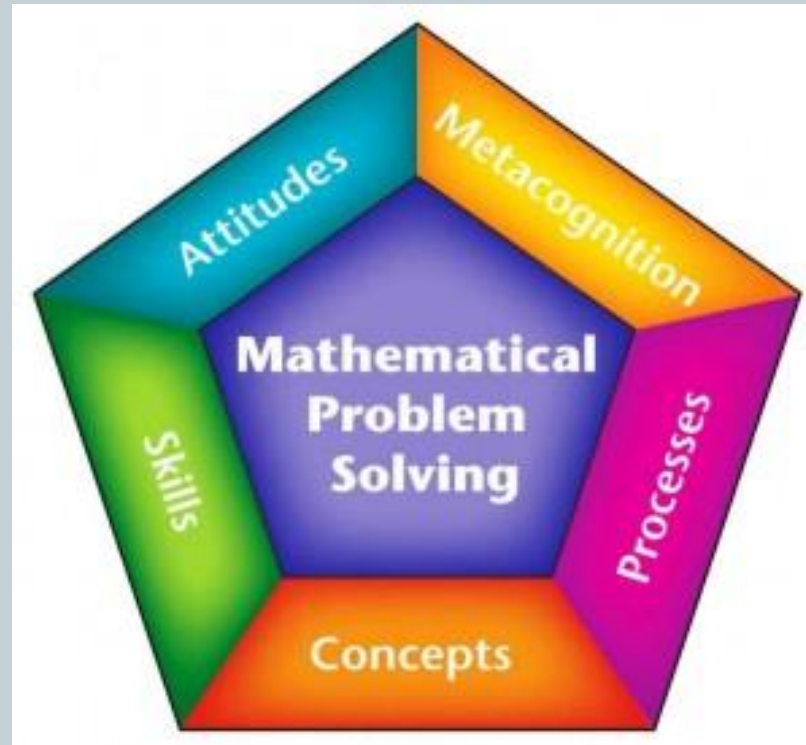
- K-5 Curriculum Committee developed knowledge of the expectations outlined in the PA Common Core Mathematics Standards
- Planned instructional shifts required of Common Core implementation
- Began curriculum revision process
- Reviewed and selected Math in Focus as the core resource to support instruction



Singapore Math Philosophy and Framework



Primary goal is for students to become strategic mathematical problem solvers and persevere in solving problems.



What distinguishes the revised math curriculum?



- The revised K-5 math curriculum focuses on teaching to mastery with great depth, which means:
 - Fewer concepts addressed each year, but concepts are taught in greater depth until students reach mastery.
 - Rigor is increased by approximately one grade level to meet the demands of the Common Core Standards. Transition units will be implemented over the next two years to support students and ensure they have the background required to access complex content.

Teach Less, Learn More



Grade 1: Equal Groups

Grade 2: Introduction of Division Symbol

Grade 3: Division with Remainder

Grade 4: Multi-digit by single digit

Grade 5: Dividing by Fractions

Concrete-Pictorial-Abstract Approach

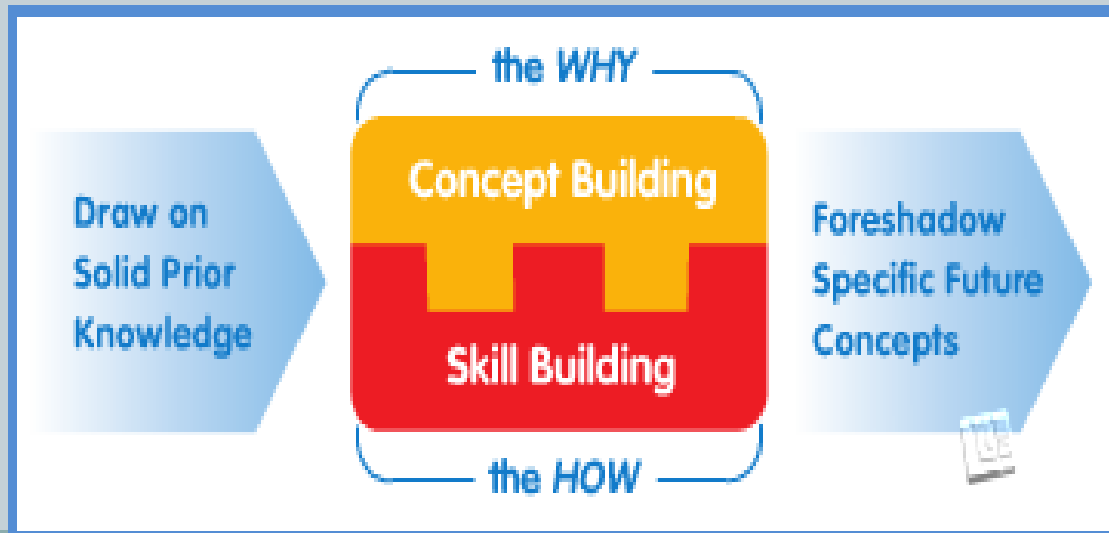


- Students are first introduced to concepts with concrete manipulatives, which allow them to experience and understand the math they are learning.
- Students then learn to visually represent concepts using models, including number bonds and bar models.
- Finally, once students have a strong understanding of the concept, they move to the abstract stage where they use symbols, such as numbers and equations, to represent mathematical situations.

Students will understand the WHY and HOW



- Both understanding and application of skills are taught... the WHY and the HOW behind the math.
- Visual models are used to help students focus on the WHY. This is an important step in helping students *experience* math and become fluent with standard mathematical operations.

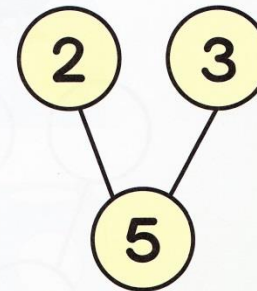
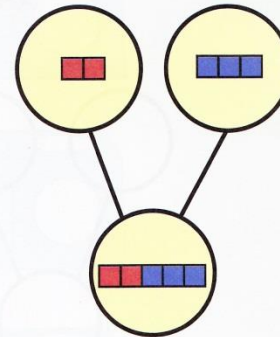
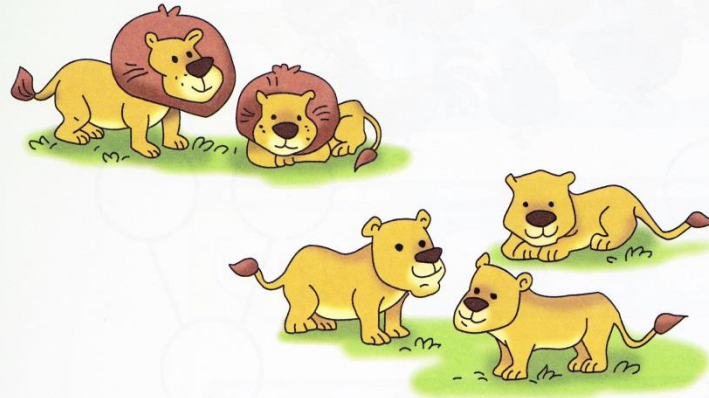


Visualization/Representation



- The K-5 revised math curriculum and Math in Focus teach students several consistent visual models that they can use to makes sense of mathematical relationships and solve problems.
- Each model is fully integrated into the curriculum and carried across grade levels, allowing students to build upon them and understand increasingly complex concepts.

A Closer Look at Kindergarten



Let's Try A Problem



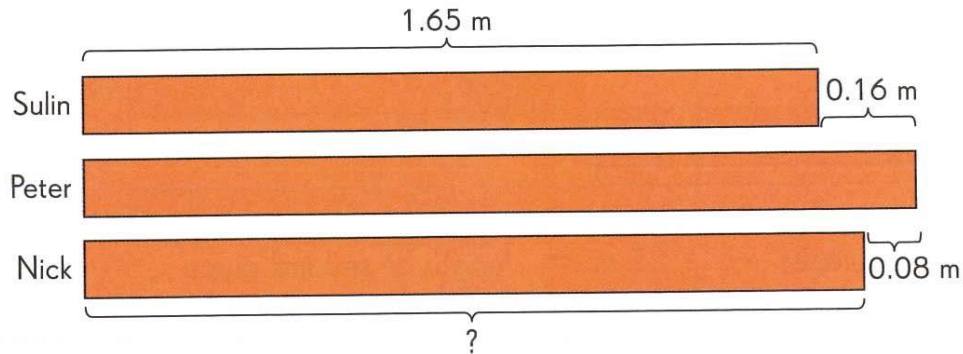
Peter is 0.08 meter taller than Nick.
Sulin is 0.16 meter shorter than Peter. If
Sulin is 1.65 meters tall, what is Nick's
height?

How Can We Use Visual Models to Assist



Use bar models to solve real-world problems.

Peter is 0.08 meter taller than Nick. Sulin is 0.16 meter shorter than Peter.
If Sulin is 1.65 meters tall, what is Nick's height?

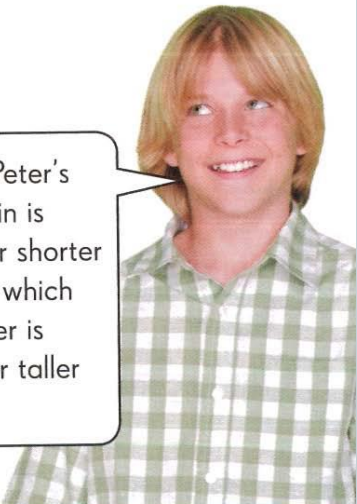


$$\begin{aligned}\text{Peter's height} &= \text{Sulin's height} + 0.16 \text{ m} \\ &= 1.65 + 0.16 \\ &= 1.81 \text{ m}\end{aligned}$$

Peter's height is 1.81 meters.

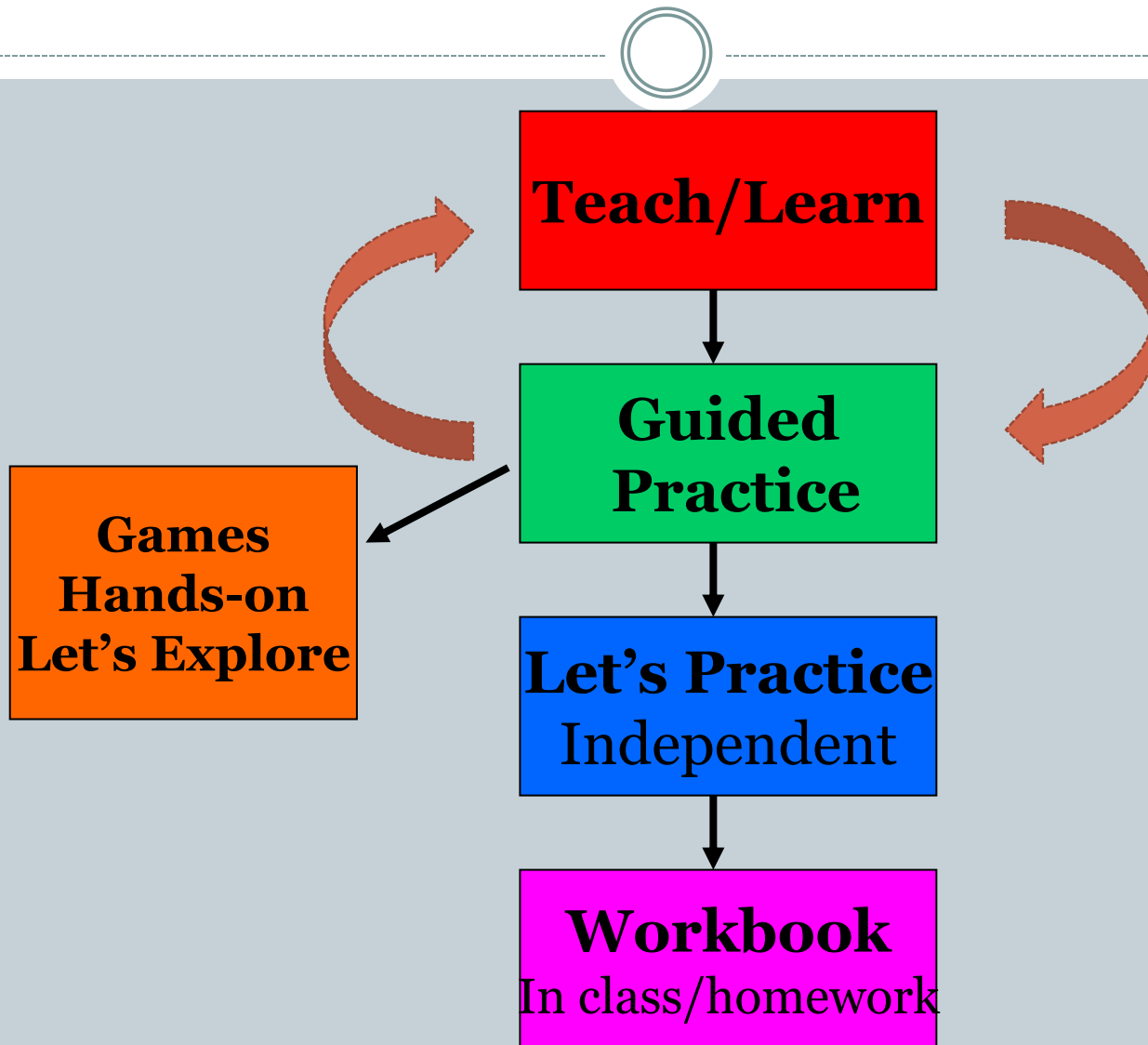
$$\begin{aligned}\text{Nick's height} &= \text{Peter's height} - 0.08 \text{ m} \\ &= 1.81 - 0.08 \\ &= 1.73 \text{ m}\end{aligned}$$

Nick's height is 1.73 meters.



First, find Peter's height. Sulin is 0.16 meter shorter than Peter which means Peter is 0.16 meter taller than Sulin.

Math in Focus Lesson Structure



Differentiated Instruction



- The revised K-5 math curriculum and Math in Focus support mathematical instruction at a variety of levels to target all learners, from struggling to gifted.
- Teachers have access to online and print resources to provide remediation, additional practice, and enrichment.

Home School Communication



- Every student will have a textbook and a workbook to support their learning. Homework will be reinforcement of concepts students have previously learned in class and will be in the workbook or on a separate sheet of paper.
- The textbook is available to all students and their families online through ThinkCentral. Students will receive their login information during the first few weeks of school.



Home School Communication



- At the beginning of each unit, parent letters will be sent home and posted online to provide an overview of the concepts and skills being addressed.
- The district will provide multiple opportunities for parents to learn more about the math curriculum and how to support your child at home including Family Math Nights and online parent resources.

Math in Focus
SCHOOL to HOME
Connections

Chapter 1 Numbers to 10,000

Dear Family,
In this chapter, your child will study numbers to 10,000. Some of the skills your child will practice are:

- counting, reading, and writing numbers to 10,000
- reading and writing numbers in different ways
- comparing and ordering numbers

.....

Activity
We encounter numbers every day in our lives, for example, the numbers on a clock face, telephone numbers, bus service numbers. Expose your child to numbers around him or her so that large numbers will not be intimidating.

- Have your child keep a lookout for the license plates of the vehicles parked near your home. Then challenge your child to say the license plate numbers (excluding the letters) in word form. For example, 1,234 is one thousand, two-hundred thirty-four.
- As an extension activity, have your child say the number in expanded form. For example, 1,234 is the sum of, 1,000, 200, 30, and 4.

Vocabulary to Practice

Word form: Two thousand, four hundred seventy-eight

Standard form: 2,478

Digit: In 2,478, the digits are 2, 4, 7, and 8.

Expanded form: $2,000 + 400 + 70 + 8$

2,000 1,000 2

2,000 is **greater than** 1,000.
1,000 is **less than** 2,000.
2,000 is the **greatest** number.
2 is the **least** number.

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School-to-Home Connections 5

Learn More



Great Valley Teaching and Learning
website for additional resources and
information

www.gvsd.org/curriculum