Houghton Mifflin’s *Math in Focus*

2017-2018 marks the third year our Lower School students have developed their understandings of math through a Singapore approach to instruction.
Singapore’s Mathematics Framework

From the Singapore Ministry of Education
BENEFITS OF MATH IN FOCUS

- Students learn the ‘why’ behind each math concept before they learn the ‘how’.
- This allows teachers to teach to mastery.
KEY STRATEGIES

• Concrete ➔ Pictorial ➔ Abstract

• Visualization

• Math is thinking
• *Math in Focus* pre-tests are philosophically different from those in traditional programs. In *Math in Focus*, students doing well on the pre-test are READY to learn the topics covered in that chapter. It does not mean they already know the material.
FORMAT OF EACH LESSON

• Direct Instruction
• Guided Practice
• Hands-On Activity
• Let’s Practice
• Independent Practice
• (Course 1 and Course 2 lesson components include Learn, Guided Practice, Hands-on Activity, and Practice)
PACING OF LESSONS

• Instruction is planned and paced with intention.

• Lessons in *Math in Focus* require multiple days to ensure mastery is being achieved.

• No longer will there be a new lesson every day.
• Direct instruction revolves around conversations and visualization of the skill being taught in the lesson.

• Through conversations between teacher and students, a solid foundation is established.

• Direct instruction occurs several times during a lesson.
WHAT DIRECT INSTRUCTION LOOKS LIKE

Students will not see the picture. Rather, the teacher uses the picture to guide the conversation.

You can use base-ten blocks to show numbers.

Put 10 together to make 10.
Put together 10 10.
10 tens = 100

10, 20, 30, 40, 50, 60, 70, 80, 90, 100.

One hundred!

100 one hundred

108 one hundred eight

218 two hundred eighteen
GUIDED PRACTICE

Includes:

- Manipulatives
- Teacher questioning
- Cooperative grouping

• These steps may be repeated within each lesson.
WHAT DOES GUIDED PRACTICE LOOK LIKE?

Guided Practice
Find the missing numbers.

1. How many dots are there?

2. How many dots are there?
HANDS-ON ACTIVITIES

• Allow the students to demonstrate their understanding of a skill.

• Allow the teacher to assess students’ understanding and correct errors.
Students apply what they know

**Show the Number!**

**Players:** 2

**You need:**
- base-ten blocks
- place-value charts

**STEP 1**
Player 1 shows Player 2 some base-ten blocks.

**STEP 2**
Player 2 counts the blocks and writes the number in the place-value chart. Player 2 then writes the number in standard form, word form, and expanded form.

**STEP 3**
Player 1 checks Player 2’s answers.
LET’S PRACTICE

• Last step before independent practice

• Allows the students to demonstrate their understanding of a skill independently in class

• Allows the teacher to assess each student’s understanding and correct errors
LET'S PRACTICE
First Steps to Independence

What are the numbers shown by the base-ten blocks?

1. Hundreds | Tens | Ones
   - 100
   - 10
   - 7

2. Hundreds | Tens | Ones
   - 100
   - 10
   - 8

Count on.
Use base-ten blocks to help you.

3. 615, 616, 617, □□□, □□□, □□, □
4. 468, 478, 488, □□□, □□□, □□, □
Students will move to independent practice when understanding has been demonstrated in the classroom.

Although some independent practice will take place at home, most will be at school.
The concepts and skills are intentional.

They are designed to prepare students for success in more advanced mathematics.
A curriculum should revisit basic ideas repeatedly.

Each time a concept is revisited in *Math in Focus*, it is also extended.

Students are not simply repeating skills, rather practicing the same skill at higher levels.
On Level Learners have experiences that solidify their learning.

Advanced Learners have experiences of varying complexity to extend their learning.

At times, learners might benefit from additional experiences in the concrete phase with manipulatives and visuals to aid their learning.
• Developing independence is a critical component of *Math in Focus*.

• Resist the urge to show how the work should be done. Instead, encourage your child to look at a sample problem while you ask questions such as:
  • “What do you remember from class?”
  • “What do you think this means?”

• *Math in Focus* author Andy Clark discusses homework: https://www.youtube.com/watch?v=7cx0jfYm9M4
“MATHEMATICAL PROBLEM SOLVING IS CENTRAL TO MATHEMATICS LEARNING.

It involves the acquisition and application of mathematics concepts and skills in a wide range of situations, including non-routine, open-ended, and real world problems.”

INFORMATIVE LINKS

Listen to Dr. Yeap Ban Har: https://www.youtube.com/watch?v=ekvAE7K3mmA

Author Andy Clark discusses ways to help your child with homework: https://www.youtube.com/watch?v=7cx0jfYm9M4