



Program Overview

Program Overview

A Teacher's Resource is key to the successful implementation of any mathematics program. The next few pages will help you understand and appreciate the unique attributes of the **My Math Path** program.

You will learn how your students will gain depth of understanding, fluency with skills, and confidence in problem solving. You will learn how to prepare students for formal assessments, and how to remediate and enrich to meet all your students' needs.

Instructional Pathway	6
Extensive Teacher Support	11
Program Components	17
Technology Resources	20
Program Author and Canadian Curriculum Advisor	21

My Math Path is the Canadian edition of Singapore's most widely used primary program, My Pals Are Here! Maths. Aligned to the Singapore Mathematics Framework, **My Math Path** provides world-class mathematics instruction that meets the specific needs of Canadian students.

Meeting the Needs of Canadian Classrooms

Top performing countries have gained ground on, and now surpass Canada in mathematics education, as shown by the Trends in International Math and Science Study (TIMSS)¹. Efforts to reverse this trend have led to a large body of solid research. Analysis of the research base has led the National Council of Teachers of Mathematics (NCTM)², the National Math Advisory Panel³, the American Institutes for Research^{®4}, the National Research Council⁵, the National Governors Association, and the Council of Chief State School Officers to make several undisputed key recommendations:

- focused and coherent curriculum, year after year
- equal emphasis on conceptual understanding and fluency with skills
- use of concrete and pictorial representations
- multi-step and non-routine problem solving

... by Drawing on Success in Singapore

Singapore students have been top performers on the TIMSS assessment since 1995.

The key recommendations parallel the Singapore Mathematics Framework.

- Precise framework of concepts and skills (specifics of what to exclude, as well as what to include, provides hierarchy and linkage)
- Skills and concepts taught in depth to allow for mastery (consolidation of concepts and skills)
- Use of a concrete to visual to abstract development of concepts using model drawings to connect visual representation to problem solving and algebra
- Emphasis on problem solving considered central to all mathematics study

In Canada, an increased focus on improving fundamental math skills has risen to the forefront of mathematics education.

"Making sure that students have a strong understanding of the fundamentals of math is one of the best ways to prepare them for success, now and in the future."

-Ontario Ministry of Education⁶

Footnotes

- Stephens, Maria, Katherine Landeros, Robert Perkins, and Judy H. Tang. Highlights from TIMSS and TIMSS Advanced 2015: Mathematics and Science Achievement of US Students in Grades and 8 and in Advanced Courses at the End of High School in an International Context. NCES 2017–002. National Center for Education Statistics, 2016.
- 2. National Council of Teachers of Mathematics. *Curriculum Focal Points for Prekindergarten through Grade 8 Mathematics*, 2006.
- 3. National Mathematics Advisory Panel. *Foundations for Success*. U.S. Department of Education, 2008.
- American Institutes for Research[®] What the United States Can Learn from Singapore's World-Class Mathematics System. U.S. Department of Education Policy and Program Studies Services, 2005.
- National Research Council. Adding It Up: Helping Children Learn Mathematics. Washington, DC, National Academy Press, 2001.
- 6. A Parent's Guide to the Fundamentals of Math, p.1, Ontario Ministry of Education, 2018.

Problem Solving and Mastery Learning

My Math Path helps students build solid conceptual understanding through a focus on problem solving. The strategic, articulated sequence of topics are developed in depth to mastery following the Singapore Mathematics Problem Solving Framework. Students learn the "why" and the "how" through instruction, hands-on activities, and problem solving.

Singapore's Mathematics Framework



Visuals and Use of Models

My Math Path consistently employs a concrete-pictorial-abstract progression. Clear and engaging visuals that present concepts and model solutions allow all students to gain a strong conceptual understanding.



Concrete

Concepts are first introduced through hands-on experiences with manipulatives, which allows students to experience and understand the math they are learning.

Pictorial

Students then learn to visualize the concept and represent it pictorially through models, including number bonds and bar models.

Abstract

Students only use symbols, such as numbers and equations, when they have enough context to understand what they mean.

My Math Path

addresses fewer topics in greater depth at each level.

- Knowledge is built carefully and thoroughly with both multi-page lessons and multi-day lessons.
- Time is built into the program to develop understanding with activities, as well as ample scaffolded, guided learning with every Learn and extensive skills practice.

1	Numbers to 10
•	Chapter Overview
	Differentiation Resources. 1B
	Assessment and Remediation
	Chapter Planning Guide
	Chapter Introduction
	Recall Prior Knowledge and Quick Check Counting
] Counting to 10
	Learn Point with Your Finger and Count
	Honds-On Activity Show a Number in a Ten-Frame, and Then Count
	Let's Explore Show Numbers in Different Ways Using a Ten-Frame
	Gome Land on 10!
	2 Comparing Numbers
	Leorn Match and Compare • Count and Compare
	Honds-On Activities Count and Compare Using Cutouts and Ten-Frames • Make Number Trains Using Linking Cubes
_	3 Counting On and Back

Grade 1, Chapter 1, Lesson 1

My Math Path

focuses on core math concepts.

 Content is focused on building foundations for number, patterns and algebra, measurement, data and probability, and geometry.

			6 ⁶ D3	Numbers tell how Counting is used t and compare how	many. o find out y many.
			Numbers	to 10	
		-	4	Ļ	
	Count	Read and	Show	Compare	Count On
	Ţ	Write		and Relate	and Back
	0		4 stars	1	-
		0 zero	***	******	5, 6, 7, 8, 9
2	• •	1 one		There are	4.3.2.1.0
	•• 2	2 two		more ♦ than ▲.	
	3	3 three		There are	
2		4 four		fewer ▲ than ♦.	
	•••• 4	5 five		8 is greater than	7.
	•••• 5	6 six		/ is less than 8.	
		7 seven		1 more than 7 is	8.
	• • • • •	8 eight		I less than 8 is 7	
	7	9 nine		12345678	910
	••••• 8	10 ten		3 more than 5 is	8
	•••			2 less than 10 is	8.
	••••• 9				
	::::: 10				

Problem Solving and Mastery Learning

Singapore Ministry of Education

"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."

—Mathematics Syllabus: Primary, 2006

Ontario Ministry of Education

"What students learn today will help best position them to solve everyday problems and to increase their employability in tomorrow's economy."

> -A Parent's Guide to the Fundamentals of Math, p.1, Ontario Ministry of Education, 2018

Visuals and Use of Models

National Research Council

"Opportunities should involve connecting symbolic representations and operations with physical or pictorial representations, as well as translating between various symbolic representations."

-Adding It Up: Helping Children Learn Mathematics, 2001

My Math Path

uses visual models for presenting concepts, focusing on a meaningful transition to the abstract.

- The use of models, manipulatives, strategic tools, and solving problems that require perseverance support the development of conceptual understanding.
- The visual representation of word problems with bar models and other strategies supports algebraic reasoning and strategies.
- Consistent use of concrete-pictorial-abstract pedagogy leads to conceptual understanding.

neip you ada.
in all?
part 2 whole
part 3
2 + 3 = 5

Instructional Pathway

Each lesson in the Student Book is introduced with a **Learn** element. Mathematical concepts are presented in a straightforward visual format, with specific and structured learning tasks.

Building a Solid Foundation at Each Level

Within each lesson, from chapter to chapter, and from year to year, instruction follows the concrete to pictorial to abstract sequence.

My Math Path Student Books and Online Workbooks follow an instructional pathway of



Consolidating Concepts and Skills for Deep Math Understanding

Extensive Practice

Each Learn portion of the lesson is followed by opportunities to develop deeper understanding through these features:

- · carefully crafted skills practice in the lesson using Guided Learning and Let's Practise
- · real-world problems
- additional practice problems in the Online Workbook and advanced practice in the Enrichment workbook

Guided Learning allows students to check their understanding while working with some guidance.

Let's Practise

What is the mass of the strawberry?

2 What is the mass of the mushroom?

Lesson 2 Measuring Mass 67

3 What is the mass of the tomato?

Which is the heaviest?

5 Which is the lightest?

6 The is heavier than the .

7 The is lighter than the .

Look at the picture. Then fill in the blanks

strawberry





Instructional Pathway (continued)



Applying Concepts and Skills *Builds Real-World Problem Solvers*

Grade 1 Online Workbook

Frequent Exposure

My Math Path embeds problem solving throughout a lesson.

Learn elements use models to explain computation concepts. Students become accustomed to seeing and using visual models to form mental images of mathematical ideas.



Frequent Practice

Practice pages in the Online Workbook include both computation and problem-solving sections.

- Each set of problems encompasses previous skills and concepts.
- Word problems progress in complexity from one-step to two-step to multi-step.

Nome: Date:	
Subtraction Facts to 10	Grade 1 Online Workbook
Practice 1 Ways to Subtract Cross out to subtract. Then circle the answer. Example	Name: Date: Practice 3 Making Subtraction Stories Look at the pictures. Make subtraction stories. Write subtraction sentences for each story.
5-1=? 3 (¥) 5	Example
10-1=?	There are $\underline{\beta}$ pumpkins. Jesse takes 2 pumpkins away. $\underline{\beta}$ $\underline{2}$ $\underline{6}$ $\underline{6}$ pumpkins are left.
2. 8-2=? 2 6 8	
Online Workbook 1A Chapter 4 Prodice 1	There are children.
	children do not wear glasses.

Instructional Pathway (continued)

Model-Drawing Strategies

Using bar models as a problem-solving tool is introduced in Grade 3. Students become familiar with this systematic way to translate complex word problems into mathematical equations, and avoid the common issue of not knowing where to start.

Model Drawing

- helps children solve simple and complex word problems
- develops algebraic thinking
- follows the introduction of operational skills
- helps visualize the part-whole structure of the problem
- · develops operational sense
- · fosters proportional reasoning



Challenging Problems

Each **My Math Path** chapter concludes with **Put on** Your Thinking Cap!, which challenges students to solve non-routine questions.

These problems ask children to draw on deep prior knowledge, as well as recently acquired concepts, combining problem-solving strategies with mathematical process skills.

Mathematical process skills students develop with *My Math Path* include

- problem solving
- · reasoning and proving
- reflecting
- selecting tools and computational strategies
- connecting
- representing
- communicating



Grade 1 Online Workbook

Extensive Teacher Support

Step-by-Step Support and Embedded Professional Development

children discuss how the ability to count might help

animals live and grow.

Cross-Curricular Connections provide suggestions for tying the chapter topics to other subjects.

My Math Path Teacher's Resource provides comprehensive lesson plans with pacing suggestions, step-by-step instructional support, and embedded professional development including math background discussions, and classroom management tips.



CHAPTER 1: OVERVIEW 1A

Connections provide suggestions for tying the chapter topics to Indigenous ways of

Skills Trace shows concepts and skills learned in the previous level that this chapter is based on, as well as concepts and skills in the following level that this chapter will lead to.

concepts.

Extensive Teacher Support (continued)

Differentiation Resources

Differentiating Instruction				
	English-Language Learners	Extra Support Reteach 1A	At Level Online Workbook 1A	Extension Enrichment 1A
Lesson 1	p. 5	Worksheet 1	Practice 1	
Lesson 2	p. 14	Worksheet 2	Practice 2	Chapter 1
Lesson 3	p. 28	Worksheet 3	Practice 3	

Additional Support

1B CHAPTER 1: DIFFERENTIATION RESOURCES

For English-Language Learners Select activities that reinforce the chapter vocabulary and the connections among these words, such as having children

- create a Word Wall that includes terms, definitions, and examples
- create and practise with flash cards that have number words on one side and the number on the other
- draw and label pictures with terms they represent
- discuss the Chapter Wrap Up, encouraging children to use the chapter vocabulary

For Extra Support

Select activities that go back to the appropriate stage of the Concrete–Pictorial–Abstract spectrum, such as having children

- act out number words and comparison terms
 use manipulatives to model counting on and back
 identify and tell about classroom objects that
- represent and compare numbers • draw pictures to illustrate number words

. See also page 8–9.

Assessment Resources are built in to check students' prior knowledge, diagnose specific areas of needs, formally assess progress, and when necessary, identify **Differentiated Instruction** opportunities are called out for English language learners and for students who need extra support or extension.

Assessment and Remediation

Chapter 1 Assessment

Prior Knowled	ior Knowledge		
	Resource	Page Numbers	
Quick Check	Student Book 1A	p. 3	
Formative Ass	essment		
Guided Learning	Student Book 1A	pp. 7–9, 15–16, 17–18, 21–22, 23, 24, 25, 26, 27	
Misconceptions	Teacher's Resource 1A	pp. 12, 20, 28	
Math Journal	Student Book 1A	p. 29	
Game	Student Book 1A	p. 11	
Game	Enrichment 1A	Chapter 1	
Summative As	sessment		

Chapter Review/Test Online Workbook 1A Chapter 1

Additional Assessment Resources

	Math Pre-assessments 1	Math Exit Tickets, Grade 1
Number		
Counting	Counting How Many?	Rote Counting Backward How Many? (Question 1)
Place Value and Representing Numbers	Showing Numbers Number Parts More or Fewer?	Numbers to 10 Number Parts (1) More or Fewer? (Questions 1 and 2) Numbers 10

	Problems with	Can be remediated with	
Remediation Options	Review/Test Questions	Reteach	Student Book
Goal	Online Workbook 1A	Reteach 1A	Student Book 1A
Use chapter vocabulary correctly.	1–9	Worksheet 1	pp. 4, 13, 21
Count from 0 to 10 objects.	5–9	Worksheet 1	Lesson 1
Read and write 0 to 10 in numbers and words.	5–9	Worksheet 1	Lesson 1
Compare the number of objects in 2 sets of objects by using one-to-one correspondence.	7–9	Worksheet 2	Lesson 2
Identify the set that has more, fewer, or the same number of objects.	7–9	Worksheet 2	Lesson 2
Identify the number that is greater than or less than another number.	10–11, 13–14	Worksheet 2	Lesson 2
Count on and count back.	12	Worksheet 3	Lesson 3
Relate numbers to 5 and 10.	13–14	Practice 3	Lesson 3

CHAPTER 1: ASSESSMENT AND REMEDIATION 1C

appropriate remediation.

Chapter Planning Guide



Numbers to 10

• • •

• •

.

.

• • • • •

٠



Extensive Teacher Support (continued)





•

٠ ٠

© Nelson

Extensive Teacher Support (continued)



Program Components

Core Components

Grades 1 and 2 are available in four modules to allow students to be successful using smaller, manageable pieces. Grades 3 to 8 are available in two modules.



Student Books



Teacher's Resource

Teacher's Resource contains complete program support, including Chapter Overviews with math background, cross-curricular connections, Indigenous connections, differentiation resources, planning guide, assessment and remediation, point-of-use lesson support, misconceptions alerts, math discussion suggestions, best practices, checks for understanding, and more! Will also be available in French

The direct correlation of **Student Books** and **Online Workbooks** provides the full program of learning, consolidating, and practising. Student Books and Online Workbooks are designed to work together. The Student Books focus on learning, classroom teaching, and discussion. The Online Workbook problems are assigned for individual work.



Program Components (continued)

Differentiation Resources

For English Language Learners

The clear drawings and visual aspect of My Math Path means the entire program is inherently accessible to English Language Learners. Additionally, the My Math Path Teacher's Resource provides lesson-specific suggestions for facilitating instruction for English Language Learners.

For Extra Support

Reteach pages, available in the Online Teaching Centre, provide more exposure to concepts for those students who need more time to master new skills or concepts. Additionally, the My Math Path Teacher's Resource provides tips for helping struggling students at point of use.



1 Numbers to 10 Worksheet 1 Counting to 10

 \otimes

~<u>~</u>~~

00 .

88 -

the \bigcirc groups to the \triangle groups with the

Λ.

Δ

• 🖽

• 🗛

5 Shapes and Objects

Worksheet 1 Exploring 2-D Shapes

triangle

• square

circle

For Extension

Numbers to 10

Enrichment exercises of varying complexity provide advanced students opportunities to extend the concepts, skills, and strategies they have learned in the Student Book and Online Workbook. This digital workbook is available in the Online Teaching Centre.



Enrichment

5

Program Components

Assessment Opportunities

Assessment opportunities in *My Math Path* offer a complete picture of student progress. The **Student Book**, the **Online Workbook**, and the **Teacher's Resource** all work in concert to provide both short-term and long-term assessment options.

Prior Knowledge

• Recall Prior Knowledge in the Student Book: At the start of each chapter, students review related prior knowledge, then try Quick Check questions to ensure they are ready for the new chapter.

Formative Assessment

- Guided Learning in the Student Book: After each Learn element, students work out Guided Learning examples with either peer or teacher input. Tips in the Teacher's Resource help in assessing student understanding.
- Misconceptions in the Teacher's Resource: Misconceptions alerts help teachers recognize and correct potential misconceptions before students practise on their own.

Summative Assessment

- Chapter Review/Test in the Online Workbook: This can be used as either review exercises or formal assessment.
- Cumulative, Mid-Year, and End-of-Year Reviews in the Online Workbook: These reviews provide opportunities for consolidation of concepts and skills from small chunks of chapters.



Misconceptions Children may confuse the parts of the number bond and record numbers in the wrong places. Draw a bond on the board, and explain that the lines join the parts together to form the whole.

Differentiation Options Depending on children's success with the Online Workbook pages, use these materials as needed.

Extra Support: Reteach 1A, Worksheets 1 to 3



Technology Resources

Engaging technology for students and teachers!

Online Teaching Centre provides additional teaching material to support the detailed lessons found in the print Teacher's Resource.

- selected Student Book pages for projection or reproduction
- Teacher's Resource
- Indigenous Connections through meaningful and authentic activities
- Blackline Masters
- Problem of the Lesson provides an additional check for student understanding
- Online Workbook practice pages and answers to reinforce lesson concepts and allow independent practice
- Reteach and Enrichment worksheets and answers to differentiate instruction
- · online games and virtual manipulatives

Premium Online Teaching Centre includes a digital version of the full Student Book in addition to all the material listed above.



Program Author and Canadian Curriculum Advisor

Dr. Fong Ho Kheong

Dr. Fong Ho Kheong is currently working as Specialist in Math Education in the Regional Centre for Education in Science and Mathematics (RECSAM) of the Southeast Asian Ministers of Education Organization. Prior to this, he acted as the Head of Math and Science Department of Bahrain Teachers College, Bahrain, and also as Head of Math and Science Department of Emirates College for Advanced Education, Abu Dhabi. Prior to taking up these posts, Dr. Fong worked as an Associate Professor at the National Institute of Education, Nanyang Technological University, Singapore.

Dr. Fong specializes in teaching both high-ability students and students who have problems in learning mathematics. His research work includes diagnosing students with mathematical difficulties, teaching thinking to solve mathematical problems, and applying psychological theories for the teaching and learning of mathematics. His experience in curriculum development has led him to innovate the use of the model-drawing approach to tackle challenging problems. He is the consultant and principal author of Marshall Cavendish's successful My Pals Are Here! Maths series, which is currently being used by the majority of the primary schools in Singapore.

Dr. Douglas Edge

Dr. Douglas Edge began his school teaching career in Montreal, Canada. Later, after completing a Master of Education degree, he taught in Nigeria. He then completed a doctorate degree in mathematics education at the University of Maryland, in the United States, and subsequently returned to Canada as a mathematics teacher educator to teach at both the University of British Columbia in Vancouver and later at the University of Western Ontario in London, where sabbatical opportunities helped provide teaching and research experiences in England, France, and Malaysia.

Ultimately, he moved to the National Institute of Education in Singapore where he taught for nine years. There, in addition to teaching pre-service teachers and graduate students, he served as Chief Editor of *The Mathematics Educator*. During that time he also helped prepare mathematics education teaching modules for both the Emirates College for Advanced Education in Abu Dhabi and The College of Education at the University of Bahrain.

Recently, Dr. Edge has co-authored a respected textbook series, Maths Works!, for pupils in Primary 5 and Primary 6 in Singapore as well as a professional development series, Teaching to Mastery: Mathematics, designed to help teachers develop a comprehensive understanding of various mathematics topics they are expected to teach.







