

Make Your Classroom a *Math Place*!

Diane Stang

Lead Author for *Math Place*
and National Math Consultant



Diane Stang has been an educator for over 40 years, working in various roles in the classroom, at the ministry level, and now as National Math Consultant and Lead Author

of *Math Place*. Her tried and true classroom-tested lessons coupled with her practical approach to math empowers teachers to teach math in an authentic, meaningful way. Diane integrates professional development in every part of the resource, building growth mindsets, “math talks”, spatial reasoning, visualization, and a balanced math approach to meet the needs of all students.

SCHOLASTIC EDUCATION

Math Place

SCHOLASTIC



***Math Place* is a comprehensive balanced math resource made up of 4 kits per grade:**

- Number Sense & Numeration
- Geometry & Spatial Sense
- Measurement
- Patterning & Algebra/Data Management & Probability

Math Place supports Ontario teachers with **embedded professional development** to help teachers better understand mathematics and pedagogy.

Math Place teaches **fundamental math skills** and concepts through **differentiated instruction**, with shared, guided, and independent problem solving in three-part lessons, **Math Talks** for purposeful class discussions, ongoing **assessment**, and integrated strategies for building **growth mindsets** and positive attitudes toward math.

***Math Place* aligns with Ontario Curriculum math strands** through a cross-strand approach, making connections to Language Arts and Science through Math, and creating meaningful contexts by **making math relevant to students' lives.**

Math Place: Professional Learning in Every Lesson

Math Place helps teachers develop a strong understanding of math content knowledge to be able to teach it; taking into account what the big ideas are, how concepts build upon each other, why it's important for students to learn them, and how they all fit into the developmental trajectory that children generally follow as they learn math.

Each lesson is prefaced with an **About the Math** section. In a few paragraphs, it explains the big ideas of the math, and extends understanding beyond what is in the curriculum expectations. It also highlights how the math concept fits into the lesson.

Other Key Areas of Embedded Professional Development:

- **Student Assessment:** *Math Place* offers formative and ongoing student assessment in every kit to guide future instruction. There are **Possible Learning Goals**, which outline the purpose of the lessons, based on the curriculum expectations, and the **Teacher Look-Fors** that break down the learning goals into specific observable behaviours that reflect a student's understanding of the math. These can be used in consolidation to co-create **Success Criteria** with the students once

the learning has evolved throughout the lesson.

- **Comprehensive Balanced Approach:** *Math Place* balances attitudes and content by building **growth mindsets** and positive attitudes right in the lessons. *Math Place* also balances content through **conceptual understanding and fundamental foundational skills**, using the conceptual understanding to help students develop the strategies that will help them with their skills. **The instruction and varied lesson plans** in *Math Place* also follows a **differentiated, balanced approach**.
- **Linking Spatial Reasoning to Math Success:** In *Math Place*, teachers can develop their own spatial reasoning abilities along with their students by engaging in the spatial activities within the kits. Students use concrete materials to represent their thinking, and are encouraged to visualize first before manipulating the materials, thereby developing spatial skills. By working with concrete materials, students develop powerful mental images of the math that can later be retrieved and used to solve problems.

Add-on Manipulatives Kits Sold Separately

Grade 1 Math Place Math Manipulatives Kit (17 items)
978-1-4430-5384-6..... \$325.00

Grade 2 Math Place Math Manipulatives Kit (18 items)
978-1-4430-5629-8..... \$365.00

Grade 3 Math Place Math Manipulatives Kit (16 items)
978-1-4430-5630-4..... \$399.00



Canadian Coins,
Sets of 110

Snap Cubes®,
Set of 500



Two-Colour Counters,
Sets of 200

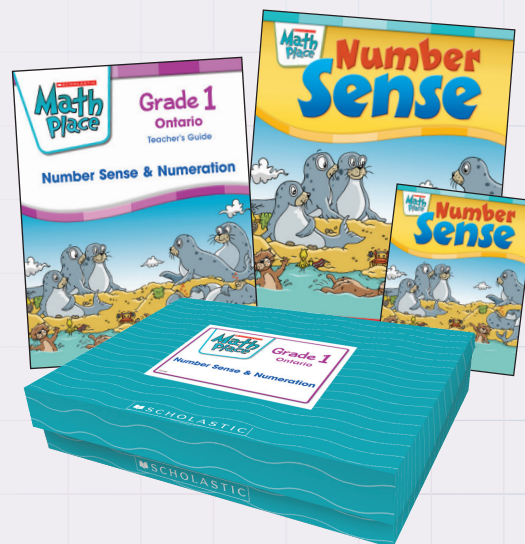


*sample manipulatives shown

Math Place Ontario Kit Components

- Each kit for Grades 1-3 includes:

- Teacher's Guide
- Read Aloud Texts
- Big Book (and 8 copies of little book version)
- 2 Math Little Books (8 copies of each)
- Overview Guide
- Book of Reproducibles
- Website with Additional Resources

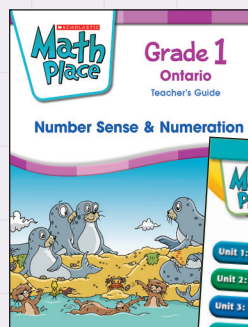


Read Aloud texts

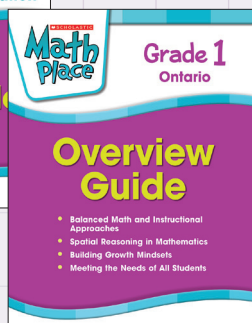
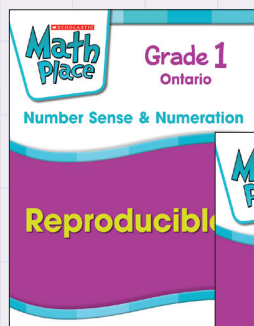
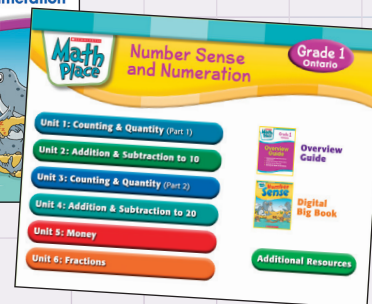


Math Little Books

The Teacher's Guide supports teachers in building students' conceptual understanding of math by providing hands-on learning experiences, with concrete tools and materials to solve problems. Also available online.



Teacher's Guide and Website for every kit



The Overview Guide supports teachers in building students' conceptual understanding of math by providing hands-on learning experiences, with concrete tools and materials to solve problems. Overview Guide and reproducibles available in print and online through teacher website.

Sample Grade 1 Lesson:

Sample Lesson

Counting Back from 20

Math Place ON Grade 1: Number Sense and Numeration Sample Lesson

Math Curriculum Expectations

- Count backwards from 20 by 1's, 2's, and 5's, using a variety of tools

Possible Learning Goal

- Solves problems using a variety of counting strategies

Teacher Look-Fors

- Selects an appropriate strategy to represent the problem
- Identifies some ways that shoes can be taken away to be left with 0
- Accurately counts backwards from 20 by 1's, 2's, 5's, and 10's
- Explains what is happening to the number of shoes with each count (e.g., the quantity is being reduced by an equal amount)
- Offers a non-example of a number that would not work and explains why

Previous Experience with Concepts:

Students have composed and decomposed quantities to 20 and have counted backwards by 1's from 20.

Mathematical Processes:

Problem solving, representing, reasoning and proving, selecting tools and strategies, communicating, reflecting

Math Vocabulary:

equal number, take away, pair, "buy 1, get 1 free"

About the Math

As Marian Small points out, counting backwards is often overlooked when teaching or assessing counting skills. This ability plays a significant role in preparing students for understanding the operation of subtraction (Small, 2009, p. 86). It also helps students consolidate their understanding of number relationships, since they are 'undoing' the process of counting forward, either by 1's or when skip counting.

About the Lesson

In this lesson, students problem solve to find ways to remove items in equal groups from a total of 20 to end up with no items left over. Through this visual activity, they are discovering the various ways to count backwards from 20 (by 1's, 2's, 5's, 10's, and 20), and the concept that equal groups are being removed each time, resulting in the quantity continually getting smaller by the same amount.

About the Math

The *About the Math* section explains the big ideas of the math and sets up the rest of the lesson so the teacher can understand why certain aspects of the math are being highlighted throughout the lesson.

Minds On

Detailed three-part lesson plans include rich problems for students to solve and many opportunities for collaborative learning, communication of ideas, independent problem solving, and practice.

Differentiation

Suggestions are provided for how to differentiate the learning to meet the specific needs of all students.

Minds On (15 minutes)

- Show students the "Shoe Spot" picture (page 10 in the *Number Sense* book). Draw attention to the six shoes on the "Buy 1 Pair, Get 1 Pair Free" table. Ask why they think there is only one of each kind of shoe on display.
- Use six of the students' shoes to serve as a model for the following problem. Tell students that they are to think of ways to take the same number away each time until there are none left. Ask how they could do it if they took one shoe away at a time. Have students model this scenario. Explain that one shoe was taken away each time so the number of shoes was halved each time.

Number Sense and Numeration Counting and Quantities

Blackline Masters

A variety of concrete materials and Blackline Masters (BLMs) support the lessons.

Assessment
Assessment for learning is supported by suggestions on how to assess through observations and conversations.

Materials:

- "Shoe Spot" (page 10 of the *Number Sense* big book), BLM 19: *Shoe Spot*, chart paper, markers, connecting cubes or counters

Time: 50 minutes

same. Have students count backwards from 6 as the shoes are taken away. Ask if there is another way to do this.

- If students do not have a suggestion, have them try taking 4 shoes away at a time. Ask why this way will not meet the challenge in the problem (e.g., you can't take 4 shoes away every time and have 0 left). Have students suggest other numbers that may work.
- Try students' different suggestions until all ways have been found (by 1's, 2's, 3's, and 6's). Have them count backwards to match the number of shoes being taken away each time (e.g., 6, 4, 2, 0; 6, 3, 0).
- Ask whether a group of 6 can be taken away all at once and still follow the rules. Students can count backwards: 6, 0.

Working On It (20 minutes)

- Direct students' attention to the flip-flops at the bottom part of page 10 in the big book. Tell them they are going to solve a similar problem, but with 20 flip-flops. Ask, "How many ways can you take the same number of flip-flops away each time and get to 0, with no flip-flops left over? How can you count them being taken away?"
- Have students work in pairs and provide copies of BLM 19: *Shoe Spot*. Encourage students to use counters or connecting cubes to represent the flip-flops, and have them record their counting sequences from 20 to 0.
- Students can draw how the set reduces with each count, and put the skip-counting numbers beside the corresponding pictures.

Differentiation

- Change the number of shoes in the problem according to the individual needs of your class (e.g., it can be based on the 8 slippers or the 12 rollerblades shown in the "Shoe Spot" image).

Assessment Opportunities

Observations: Observe students' problem-solving strategies. Can they select concrete materials or tools to model their thinking? Do they know where to start? Do they understand that there must be none left when the final group is taken away?

Conversations: If students are struggling, pose some prompts:

- What are you supposed to do?
- What were we doing with the 6 shoes?
- Why could we take 2 shoes away each time, yet 4 did not work?
- Let's try working with 8 shoes. What number could you try? (Have students act out the problem, keeping each group taken away in a separate pile.) Did it work? Why? What do you notice about all of the piles? Did you end up with none left? Then this way works.
- What number do you think won't work? Why?
- What is another number that you think will work?

Number Sense & Numeration

Consolidation

Consolidating prompts and discussions are designed to connect students' mathematical thinking and bring clarity to the big ideas.

Building Growth Mindsets

Prompts embedded in the lessons help to develop and reinforce positive growth mindsets.

Further Practice

Further Practice activities offer students the opportunity to practice newly acquired skills.

Consolidation (15 minutes – 5 minutes for meeting with another pair and 10 minutes for class discussion)

- Have two pairs of students meet to discuss and compare their solutions.
- Choose two or three solutions to be explained to the whole class, with each focusing on a different way of counting back (e.g., by 1's, 2's, 5's, 10's, and 20's).
- Have students give examples of what wouldn't work (e.g., taking away 3 or 6 flip-flops at a time). Ask why they think the examples don't work.
- After each sharing, have the class count backwards according to the strategy identified in the solution.
- Have a student show how the counting sequence looks on the class number line, as the class counts backwards. Connect this representation to the drawings of counting backwards.
- If all the different ways are not found, ask students to justify how they know that there are no other ways. For example, they may overlook taking 20 flip-flops away all at once.
- Have students compare the ways of counting (e.g., counting by 10's is faster than counting by 2's).

Further Practice

- **Independent Problem Solving in Math Journals:** Draw attention to the slippers in the "Shoe Spot" picture. Ask students how they could take an equal amount of slippers away each time and end up with zero. Have students show at least one solution in their journals.

Materials:

"Number Crunch" (page 9 in the *Number Sense* big book and little books), class number line to 50

Teaching Tip

Integrate the math talk moves (see page 6) throughout Math Talks to maximize student participation and active listening.

Math Talk:

Math Focus: Counting back by 1's from 20 and any number less than 20

Let's Talk

Select the prompts that best meet the needs of your students.

- How many pieces of fruit are on each plate? How can you count them? (e.g., 1, 2, 3, 4, 5) Visualize that the fruit on the first plate is eaten, one piece at a time. How would you count the fruit as it disappears? (e.g., 5..., 4, 3, 2, 1, 0)
- How many oranges are there altogether? How do you know? How could you count them if they were eaten one at a time? (e.g., 10..., 9, 8, 7, 6, 5, 4, 3, 2, 1, 0)
- How would you count back from all the oranges so there are 6 oranges left? (e.g., 10..., 9, 8, 7, 6) How many oranges did you take away? How do you know? (e.g., I counted backwards and then counted the oranges I took away; I put a finger up for every count backwards.) Where are these two numbers on the number line? How can you prove that you took 4 oranges away?

Number Sense and Numeration Counting and Quantity 4

Math Talk

Math Talks helps students talk about the math, discuss it with others, reflect on the ideas, and continually revise their thinking. It is interwoven throughout the lessons and the teacher prompts help students understand how to get discussions started and how to further probe for understanding.

- How many pieces of fruit are in the first row? How did you count that? How could you count backwards until there are none left? Who can show the fruit left with 7 pieces of fruit?
- Repeat this type of questioning for counting back all the apples in the first two rows.
- How is counting backwards the same as, and different from, counting forward?

Math Talk:

Math Focus: Counting back by 5's and 2's from 20

Let's Talk

Select the prompts that best meet the needs of your students.

- Visualize the 10 oranges being eaten one at a time. How would you count that? How did you know what number came next when you were counting?
- Where do you see 10 bananas? Visualize that the 10 bananas are being eaten two at a time. How would you count that? (e.g., I whisper counted and said on the number line: 10, 9, 8, 7, 6, 5, 4, 3, 2, 1, 0; I looked at the numbers down every time.)
- How can we use these strategies to count back from 20 bananas? What would this counting look like on the number line? How is it the same as and different from counting forward by 2's?
- What other ways can you count back from 20? (e.g., 20, 19, 18...) What is happening to the fruit when you count this way? (e.g., they are being eaten one at a time) Are there any other ways? (e.g., count backwards by 5's: 20, 15, 10, 5, 0; count backwards by 10's) What is happening when you count backwards by 5's? (e.g., A whole plate of fruit is being eaten, so 5 pieces are taken away at a time.) Show me what this counting looks like on the number line. How does it look different from counting backwards by 2's or 1's?
- How is counting backwards the same as and different from counting forward?

How *Math Place* Meets Ontario Mathematics Expectations

Math Place Grades 1-3 —a Comprehensive Set of Mathematics Resources

Use all kits for a complete grade resource, or choose individual kits to support and supplement your current math program.

- **Number Sense & Numeration**
- **Geometry & Spatial Sense**
- **Measurement**
- **Patterning & Algebra/
Data Management
& Probability**

Learning Through Problem Solving

Math Place is based on the research-supported belief that an inquiry-based, “investigative approach, with an emphasis on learning through problem solving and reasoning, best enables students to develop the conceptual foundation they need” (Ontario Ministry of Education, 2005, p. 24).

Current Research and Spatial Thinking

Math Place provides teaching support by integrating the best of current research into classroom practices to develop a balance of students’ conceptual and procedural understanding, and skills. Many of the lessons and activities are based on recent research that shows how spatial reasoning plays an integral role in learning math concepts across all strands. Providing opportunities for students to build concrete representations of math concepts leads to an ability to form and use mental models to solve math problems.

Teaching Approaches

Math Place adopts a balanced model of teaching math, offering a variety of instructional approaches that support the gradual release of responsibility model to scaffold the learning (Ontario Ministry of Education, 2010, p. 35). These approaches include guided math lessons, shared and independent problem solving, games and activities that reinforce operational skills, whole-group lessons, and consolidating discussions. Together, they support conceptual learning, meaningful practice, and acquisition of the fundamental math concepts and operational skills. There is an emphasis on actively ‘doing’ math using a variety of concrete materials and tools, while engaging in problem solving situations that are relevant to students’ daily lives.

Linking Math to Literacy and Science

Math Place includes Read Alouds, as well as Big Book and little book titles with engaging visuals and supportive text to introduce various math concepts and to prompt student investigations. The texts and visuals also support literacy, science, and other curriculum areas, offering rich and meaningful contexts for learning math. As additional support, teaching plans for the integrated Read Aloud texts identify and incorporate effective literacy strategies.

Concrete Materials

Math Place effectively explains how to incorporate concrete materials, which are essential for students of all ages to conceptually understand the math. Research indicates that students learn math more effectively by using and manipulating concrete materials to make their thinking visible. These experiences eventually lead to more abstract ways of thinking.

Support of Differentiated Instruction

Math Place allows for differentiated learning with flexible groupings, and lessons and individual problems that can be tailored to meet the needs of all your students, such as by making the numbers simpler or more complex. This allows students to work on the same math concepts and engage in rich problem solving tasks while working with numbers they understand.

Assessment to Inform Instruction

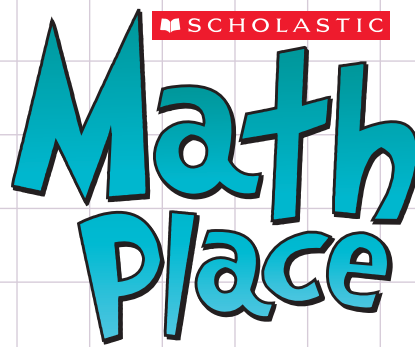
Math Place offers ongoing assessment of students' understanding to guide future instruction. Assessment Opportunities within the lessons offer prompts and suggestions on how to assess through observations and conversations. There are also Teacher Look-Fors to further support assessment and to serve as a guide for co-constructing success criteria with your students.

Math Talk

Math Place supports the understanding of math concepts through purposeful discussions that are embedded in every lesson. There are also additional Math Talks linked to many of the lessons to reinforce and extend the learning and offer further investigation.

Growth Mindsets in Mathematics

Math Place provides an introductory lesson that lays the foundation for developing positive growth mindsets. This can be continually reinforced throughout the year by using the Building Growth Mindsets prompts that are embedded in many of the lessons. For example, students learn to view mistakes as learning opportunities and to recognize that their efforts will be worthwhile, even if they don't understand a concept YET.



ISBN	Ontario Grade 1 Kits	Quantity	List Price	Amount
978-1-4430-5027-2	Number Sense & Numeration		\$429.00	
978-1-4430-5028-9	Geometry & Spatial Sense		\$399.00	
978-1-4430-5030-2	Measurement		\$399.00	
978-1-4430-5029-6	Patterning & Algebra/Data Management & Probability		\$399.00	
Ontario Grade 2 Kits				
978-1-4430-5152-1	Number Sense & Numeration		\$429.00	
978-1-4430-5153-8	Geometry & Spatial Sense		\$399.00	
978-1-4430-5155-2	Measurement		\$399.00	
978-1-4430-5156-9	Patterning & Algebra/Data Management & Probability		\$399.00	
Ontario Grade 3 Kits				
978-1-4430-5157-6	Number Sense & Numeration		\$429.00	
978-1-4430-5158-3	Geometry & Spatial Sense		\$399.00	
978-1-4430-5160-6	Measurement		\$399.00	
978-1-4430-5159-0	Patterning & Algebra/Data Management & Probability		\$399.00	

Prices in this brochure are subject to change without notice.

Education Discount Structure*

Orders of	Discount
\$2,000 – \$4,999.99	5%
\$5,000 – \$9,999.99	10%
\$10,000 +	15%

*Magazines and digital resources purchased through online subscriptions are not subject to this discount policy.

Subtotal A

Less Education Discount* (Subtotal A x _____%)

Subtotal B

Add Shipping and Handling Charges: 7% of Subtotal B (minimum \$10.00)

Deduct Reading Club Coupons/Book Fair Product Rewards

Subtotal C

GST# R104745229 Add 5% GST/HST on Subtotal C

Additional PST/HST/QST on Shipping & Handling
7% BC / 8% ON / 10% QC / 10% NS, NB, NL, PEI

HST/QST on non-book items add
7% BC / 8% ON / 10% QC / 10% NS, NB, NL, PEI

AMOUNT OWING

For more information or to order please contact
your local Scholastic Education Consultant or call 1-800-268-3848.

**SCHOLASTIC
EDUCATION**