These guided workshops have been designed to provide the tools and materials to plan and host parent education sessions. Each workshop is self-contained and includes a template for sharing practical, age-specific strategies and resources to encourage mathematics learning at home. The materials for each module include an invitation letter and flyer, an annotated agenda, and Blackline (photocopy) masters for all activities (including solutions).

These workshops have been created to complement each of the five modules in the *Inspiring Your Child to Learn and Love Math Tool Kit*. The workshops require no prior knowledge of mathematics or specialized content—they can be implemented by anyone who has an interest in learning and sharing.

*We have made every effort to acknowledge original sources and to comply with copyright law. If there are cases where this has not been done, please notify the author. Errors or omissions will be corrected in a future edition.*
Module One

General Overview

Count Yourself In
5:45–6:00 p.m.

Welcome
Warmly welcome parents, guardians, and caregivers as they arrive at the door.

Introduce yourself and briefly explain your role in the workshop.

Invite parents to help themselves to coffee and to explore the math resources, books, and games on the resource table.

Some parents may be nervous about attending a math workshop. Greeting them will help put them at ease!

6:00–6:15 p.m.

Introduction
Welcome parents and thank them for taking the time to come.

Congratulate them for taking the first step towards enriching and improving their child’s math education by attending this workshop.

You can ask school librarians and math resource teachers to help you find school materials to display at these workshops (math books, games, manipulative materials, etc.).

Thank organizers and other key members of the implementation team.

Introduce parents to the C.O.D.E. “Inspiring Your Child to Learn and Love Math” and tell them how to get a copy.

Purpose
Explain that the purpose of this workshop is to:

* Remind parents that they are their child’s primary role model in math, and that they can have a positive impact on their child’s attitudes, beliefs, interest, and motivation to do math.

* Reinforce and extend what parents may be doing at home already.

* Reassure parents that everyone is here to learn something new and to learn together!

* Provide practical strategies and suggestions that can be done at home to enhance their child’s math achievement.

* Provide resources and other tools and technology that will support parents’ efforts to help their child’s math achievement.
Activity 1: Icebreaker—“Math is Everywhere” Brainteasers

Present the following math trivia questions one at a time. Give parents time to think about each one. You may choose to use a projector to allow all parents to read along.

“Math is Everywhere” trivia questions

1. What is the geometric name for the shape of a STOP sign?

2. What is true about opposite faces on a die?

3. What shapes make up a soccer ball? How many black shapes does it have? How many white shapes does it have?

4. How long would it take to count by ones to one million?

5. How do you make a calculator skip count by threes?

6. Why are manhole covers round?

7. What else can a clock tell besides time?

8. What everyday object is shaped like a triangular prism?

9. What household object has approximately the same volume as one cubic metre?

10. What is wrong with this picture...?

“Cut my pizza into four pieces... no way I could eat eight.”

Refer to the solution key for answers!
6:30–6:40 p.m.

**Video “Inspiring Your Child to Learn and Love Math!”**
Introduce the video. Explain that the purpose of the video is to highlight that parents are:

* Natural and spontaneous math teachers.
* Responsible for setting the tone for their child’s math attitudes, behaviours, and achievement.
* Accomplished mathematicians who use math every day.
* Able to support math homework even if they are not comfortable with the content.
* Role models for their children.

Surprise! The answer to each statement is “Math Fact!”

As parents watch the video, invite them to record their thoughts and reflections on the “Reflection Sheet” provided. Allow time for discussion after the video!

6:40–7:00 p.m.

**Activity 2: “Math Myth or Math Fact?”**
Present “Math Myth or Math Fact?” activity sheet. Parents can work individually, in partners, or in teams (5 minutes). Allow time to discuss answers (10 minutes).

7:00–7:15 p.m.

**Recommended Resources**
Direct parents to the list of additional math resources listed on the Module One Fact Sheet (including math books, websites, apps, television shows and games).

7:15–7:30 p.m.

**Wrap Up**
Ask parents if they have any further questions about the workshop information or suggestions for future workshops.
Tell parents you will be available after the workshop if they have additional questions.
Thank parents for coming and ask them to complete an evaluation form.
Distribute fact sheets to parents before they go home.
## Math Myth or Math Fact?

<table>
<thead>
<tr>
<th>Myth</th>
<th>Fact</th>
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<tbody>
<tr>
<td>From the time they are born until the time they graduate from secondary school, children spend less than 15 percent of their learning time at school.</td>
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<tr>
<td>Students whose parents have a positive attitude towards math are more likely to believe that math is important and to be more motivated to learn math.</td>
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<td>More than 70 percent of Canada’s top jobs, including jobs in the skilled trades, require math, science, technology, and engineering education.</td>
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<td>Less than 50 percent of Canadian secondary school students graduate with grade 11 and 12 math and science courses.</td>
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<tr>
<td>Students who do not take grade 11 or 12 math can expect to be excluded from half of all community college programs.</td>
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<tr>
<td>Students without grade 12 science or math can expect to be excluded from 30 to 65 percent of programs at Canadian universities.</td>
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<tr>
<td>People who have a math, science, technology, and engineering education generally earn more money than those who do not.</td>
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<td>Many professions that you might not expect to require math in fact do, including culinary arts, esthetics, welding, carpentry, and retail management.</td>
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<tr>
<td>Job vacancy rates in occupations requiring math and science, including the skilled trades, are higher than in occupations that do not. This means that there are greater job opportunities for people with a math and science education.</td>
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<td>Less than 13 percent of people in the trades are women.</td>
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</table>
Solutions for “Math is Everywhere” Brainteasers

1. What is the geometric name for the shape of a STOP sign? It is an octagon.

2. What is true about opposite faces on a die? The sum of the numbers is always seven.

3. What shapes make up a soccer ball? How many black shapes does it have? How many white shapes does it have? Soccer balls have 12 black pentagons and 20 white hexagons. The math name for a soccer ball is “truncated icosahedron.”

4. How long would it take to count by ones to one million? If you assume that you count one per second, 1 million seconds = 16,666 mins and 40 seconds. That makes 277 hours, 46 minutes and 40 seconds. This equals 11 days, 13 hours, 46 minutes and 50 seconds.

5. How do you make a calculator skip count by threes? Enter “3,” then press “+” and “3,” and then continue to press the “=” key.

6. Why are manhole covers round? A square manhole cover could be picked up, rotated, and dropped diagonally through its own hole. The same is true for manhole covers made from rectangles, pentagons, and any other regular polygon. These all have diagonals that are longer than at least one side, which means the lid can be maneuvered diagonally through the hole, and fall. A cast-iron cover can weigh up to 95 kilograms, and given that a sewer can be six metres deep, this would be a deadly combination if a cover were to land on a worker below. A circular manhole cover cannot fall into the hole no matter how it is rotated because its diameter is the same all around.

7. What else can a clock tell besides time? The “five times table.” The hour markings correspond to 5, 10, 15, 20, 25, 30, 35...minutes.

8. What everyday object is shaped like a triangular prism? The container for a Toblerone chocolate bar.

9. What household object has approximately the same volume as one cubic metre? An oven.

10. What is wrong with this picture...? Regardless of whether the pizza is cut into four pieces or eight pieces, it is still one whole pizza. Whether you eat four one-fourth slices or eight one-eighth slices, you will have eaten one whole pizza!
**Video and Workshop Reflection Sheet**

In the space provided, record any thoughts, feelings, questions, or concerns you have about the information you receive in this workshop. Time will be given throughout the workshop for you to reflect.

<table>
<thead>
<tr>
<th>Reflections</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Before</strong></td>
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<tr>
<td>What I would like to know about math that will help me engage my child</td>
</tr>
<tr>
<td><strong>During</strong></td>
</tr>
<tr>
<td>What I have learned about math that will help me engage my child</td>
</tr>
<tr>
<td><strong>After</strong></td>
</tr>
<tr>
<td>What else I would like to learn about math that will help me engage my child</td>
</tr>
</tbody>
</table>

**Additional thoughts**

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
Math Mindset

Praise your child’s effort through challenging tasks as opposed to perceived intelligence or talent. “Wow, that was a tough problem! I noticed how you took your time to solve it in two different ways.”

Value mistakes and look for the “good” math in incorrect answers. Our brains grow when we recognize, think about, and learn from our mistakes. “I noticed that you made a plan for solving this problem, but it looks like something might be missing. Can you explain the steps you took to find your answer?”

Model positive math mindsets at home. Avoid justifying your child’s achievement in mathematics based upon your own experience. Children tend to identify with the strengths and weakness of their parents and will often say, “My mom (or dad) was never good at math either.” This only reinforces a child’s fixed mindset belief that intelligence is something you are born with.

Appreciate that learning takes time and it is a product of effort. It’s not as much about the outcome as it is about the thinking and the connections made during the process. “It looks like you’re stuck trying to make a plan to solve that problem. Can you make a connection to something you already know about measuring length that might help you?”

Be careful not to place a value on speed or memorization of math facts. Expecting your child to respond quickly to math fact questions like 3 x 4 or 86 – 12 may lead to a significant math anxiety and an intense dislike of math. Instead, place value on your child’s ability to think flexibly with numbers. “I took 10 away from 86 and got 76. Then I took 2 more away and got 74.”

Look for opportunities to find the math in everyday situations. Time, money, measurement, probability, rate, ratio, spatial sense, and fractions are just a few of the math ideas that can be found in our daily lives. For example—when doubling a recipe, calculating tax on the amount of a sale item, calculating elapsed time, the fairness of a game, or whether the sofa will fit in a particular space.

Written by Kristen Muscat-Fennell – Mathematics Facilitator K-8, Simcoe County Board of Education
Calculating Time Children Spend at Home vs. School (Birth–Age 18)

If a child sleeps for 8 hours in each 24-hour day:

- 8 hours asleep and 16 hours awake
- 365 days/year x 18 years = 6,570 days
- 6,570 days x 16 waking hours/day = 105,120 waking hours at age 18

- Average 6 hours/day at school
- Average 180 school days/year
- 180 school days/year x 6 hours/school day = 1,080 hours/school year
- 1,080 hours/school year x 13 school years [kindergarten + 12 years through high school] = 14,040 school hours
- 14,040 school hours ÷ 105,120 waking hours = .13356 or 13.36% of all waking hours by age 18 have been spent in school!

Recommended Resources

- Family Math Canada
  familymathcanada.org
- Doing Mathematics with Your Child, Kindergarten to Grade 6, A Parent Guide
  (Ontario Ministry of Education, 2014)
edu.gov.on.ca/eng/literacyNumeracy/parentGuideNumEn.pdf
- Parent Resources
  (Education, Quality and Accountability Office)
eqao.com/Parents/parents.aspx?Lang=E
- Mathies
  mathies.ca
- TVOParents resources to support math learning at home
tvoparents.tvo.org/topic/school-learning#/1185/math
- TVOKids shows about math for children aged 6 to 11
tvoparents.tvo.org/article/tvokids-shows-ages-6-11-teaching-math
- Family Resources (NCTM)
  old.nctm.org/resources/content.aspx?id=7928
- Calculation Nation (NCTM)
calculationnation.nctm.org
- Illuminations Games, PreK-Gr 12 (NCTM)
illuminations.nctm.org/allgames.aspx
- Mathfrog
  cemc2.math.uwaterloo.ca/mathfrog

Recommended Readings

- Mindless Math: How children really spend their time (Birth–18 years)
  57% Awake, not in school
  30% Asleep
  13% In school

Count Yourself In

General Overview

Count Yourself In

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Council of Ontario Directors of Education
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You are their idol. They look up to you.
They don’t do a good job listening to you. You are their idol. They look up to you.
Did you know?

- Research shows that early math literacy helps children to succeed in school and improves their future career prospects.
- 70 percent of Canada’s top jobs require science, technology, engineering, and math (STEM) education. This includes careers we may not expect, such as culinary arts, animation, and fitness.
- When children are positively engaged and successful, they are more likely to stick with an activity and keep searching for a solution to a problem.
- Early success in problem-solving will build your child’s confidence.

Why “Mathitude” Matters

Positive thinking
Students who are encouraged to have a positive attitude about math from an early age will develop positive feelings about the subject.

Keep them engaged
Students who are engaged in the learning process will learn more and be open to further learning.

Motivation
Students who believe that math is important for their future will be more motivated to learn math.

Build confidence
Students who feel confident in their own ability to do well in math will be more likely to perform well.

Parent involvement and math achievement

“How can I help?”

Be positive
Choose your words carefully. When parents (and other adults) say they aren’t good at math—sometimes to make children feel better—they may be giving children permission to stop learning.

Avoid math anxiety
Math anxiety (unproductive tension and stress) is real and occurs in children as well as adults. Pressure from timed tests and the risk of failure are major sources of math anxiety. Try not to over-react when your child makes a mistake. Making mistakes is an important part of learning!

Learn from mistakes
Homework time can be a more positive experience if you help your children learn from mistakes: praise their efforts, ask them to explain their answer, ask them to think about why the mistake happened, and encourage them to try again.

Help set the tone
Be relaxed and engaged as your child does math homework. You are not expected to be an expert, but you can offer support and ask questions: “How did you do that?”; “Why did you do that?”; “How do you know if you are right or wrong?”; and “Would you teach me how to do another question like this one?”

Be patient and build confidence
If your child becomes frustrated, stop. Remind them of things that they have already learned how to do successfully, such as riding a bicycle or playing a musical instrument.

Ask a teacher
Ask your child’s teacher or other member of the teaching team for strategies to use at home. If your child asks for help and you do not know the answer, be honest and say, “I don’t know but let’s figure it out together. If we can’t, we’ll ask your teacher for help together so we can both learn.”

Make math part of everyday life!

“What are some math activities I can do to support my child’s math learning at home?”

Math games
On no-homework days, quiet evenings, and during vacations, play math games. Math puzzles and games can show that math is fun. They also require trial-and-error thinking, enhance numeracy and logical thinking, and promote discussion. Many mathematicians say a love of puzzles and games inspired their math abilities.

Math on TV
Watch educational television programs. Many offer websites with activities to do together, including free games, apps, math crafts, and songs.

Math at the grocery store
Take your child grocery shopping. The grocery store is full of great math opportunities. You can talk to your child about how to weigh fruit on a scale or how to estimate the total cost of items as you fill your cart.

Math in computer games
If your children enjoy playing on the computer, introduce them to fun and educational web-based games, such as “Mathfrog” and “Calculation Nation.”