

Inspiring Your Child to Learn and Love Math

Resource Guide



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Introduction

“Parent engagement matters. Study after study has shown us that student achievement improves when parents play an active role in their children’s education, and that good schools become even better schools when parents are involved...”

Ministry of Education, “Parent Engagement”

This Parent Tool Kit was created specifically for parents of children in the elementary grades (junior kindergarten to grade 8) in Ontario. The goal of this resource is to provide parents with the most essential, research-based information to help them be the best, most knowledgeable and most confident supporters for their child’s mathematics education.

This Tool Kit is unique because it provides facts and strategies

not found in other parent resources in Ontario. It includes a number of distinct elements: print resources, fact sheets, workshop materials, and videos organized into modules based on grade levels.

How you use this Tool Kit is up to you. You might choose to read the print materials in the five stand-alone modules from front to back. Perhaps you will use them as a reference guide to answer specific questions. Or

Introduction (continued)

maybe you have time to read only the fact sheets, which highlight key information from each module. A visual learner might begin by watching the overview videos that feature highlights from each module. The videos can be found on the Tool Kit's website.

You might also want to share the Tool Kit with other parents in your community who are struggling to find the information they need to help their children navigate the K-8 mathematics program. You can do so by using the workshop planning guide to host a parent information evening at your

local school. However you choose to use it, this Tool Kit will undoubtedly help strengthen your knowledge and understanding. It emphasizes the many ways in which you play an important role in your child's education, and the fact that your child will be able to succeed in mathematics with your help and support.

The contents of this Tool Kit are available online. They can be reviewed and downloaded by going to:

ontariodirectors.ca/parent_engagement.html

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Module One



General Overview

Count Yourself In

In this module, you will discover that you already have the skills and knowledge to make many positive contributions to your child's math education!

You are a math teacher!



When you are interested in and encourage learning, your attitude affects your child's educational success.

in plain sight" that people tend to underestimate their abilities and think of the math they do as "just" common sense.

We have all heard that reading together helps children to develop reading skills and that playing sports in the backyard teaches the importance of teamwork and being physically active. But why is math missing from this list of common and spontaneous learning opportunities?

Yes you can really help your child succeed in math!

People often assume that it is difficult for parents to contribute to their children's math education. Yet as adults, each of us uses math countless times each day at home and at work, often without realizing it. In fact, so much math is "invisible

Really helpful tip #1

Value yourself as a key member of the math teaching team!

You set the tone for math success!

Be positive

Try not to talk negatively about math. If a child hears an adult role model say, “I’m not one of those math people,” or “I never use math,” they receive the message that only certain people can do math and that math is not important. When a child believes that only special people were born with the “math gene” or that school math does not really matter in daily life, they are not going to be as open to learning. The more often children hear cynical comments, the more deeply rooted their dislike of math becomes.

Avoid math anxiety

Each time you tell a colourful story about a bad math teacher or a failed math test, you could be planting the seeds of math anxiety in your child—feelings of tension or worry that interfere with mathematical performance at school and in daily life, and a proven cause of low achievement. Children’s early math anxieties are known to snowball over time, so youngsters who are anxious about math are more likely to become adolescents and young adults who avoid math courses and math-related career choices.



Don't take shortcuts

When you see your child using an unfamiliar strategy to add multi-digit numbers, try not to say, “Here, let me show you my way—it’s simpler and faster.” This response might undermine the teacher’s instruction, which is based on principles of children’s mathematical development. It also might confuse your child if they are not at the right stage of their math learning journey to understand your shortcuts or “tricks.”

“*...the higher the expectations, the higher the achievement scores*”

Aim high

If you have high expectations for your child, you are more likely to set high standards for your child’s schooling. In turn, they will be more likely to transmit the values of doing well in school and to set high standards for their own children’s learning.

When you encourage your child to make extra efforts to succeed in math your child is more likely to succeed!

You are a mathematician!

Children learn by imitating the people around them. They make meaning through experience and by interacting with important people in their lives. Parent imitation and modelling is essential for children to develop healthy academic skills.

Think out loud

One of the best ways for you to be a math role model is to talk out loud as you work your way through everyday tasks. Thinking out loud allows your child to hear how you think, and it helps them to develop important skills required for “thinking things out” by posing and solving problems.

When your child sees you making predictions and observations, identifying problems, using problem-solving strategies, and solving real problems, they are more likely to adopt your behaviours and attitudes.



Go grocery shopping

Grocery stores are a great source of spontaneous math lessons and a great place to use the “think aloud” strategy:

Many stores have scales available. As you shop for fruit, stop and estimate the weight of a bag of apples. Use the scale to get an accurate measure in kilograms. Congratulate yourself on the accuracy of your measurement, or ask yourself how you can improve your estimate.

As you fill your shopping cart, keep a running total of the

cost of the items by recording them in a small notebook. Round the prices in order to estimate, then check the total with a calculator. How close were you to the actual sum at the cash register?

Select a variety of bottles, cans and containers that hold one litre of contents. Emphasize to your child that, although the shape may change, the volume stays constant.



Cook with math

Think of your kitchen as a math laboratory where you are the math scientist and your child is your assistant.

Talk about special tools (cups, spoons, and scales) and methods for measuring ingredients. How do we know which measuring device to use when we read the units in a recipe? What are the steps in doubling or halving recipes? How do we set a timer? After the pizza comes out of the oven, how do we cut it into eight equal slices?

If we make 24 cupcakes, how can we share them equally if there are 6 people at the birthday party? How many cupcakes does each person get if 12 more guests arrive?



*Think of your kitchen
as a math laboratory...*



You can motivate your child's math learning!

Support math homework

These simple steps convey an important message: math is important and math homework has value.

Homework tool kit

Dedicate one drawer in the kitchen for a math homework tool kit. Plan the contents with your child: pencils, erasers, rulers, a tape measure, scissors, construction paper, graph paper, counters (beads or beans), a calculator, and glue. The drawer can grow with your child by adding specialized tools (a compass and protractor, for example) as required by the curriculum.

Have a math routine

Encourage positive attitudes and work habits by scheduling math homework time at the same time and location every day. The kitchen or dining room table is best.

Be available to help

Make yourself available during homework time. Being together with your child encourages natural conversation and interaction.

Be relaxed and positive

Remember that you are not expected to act as the content expert or teach the content. Your one-on-one attention will have a positive effect if you focus on natural conversation and two-way communication.

Focus

Keep homework time as quiet and free of distractions as possible.

Take an interest

Ask your child to explain what they are doing and why.

Learn from mistakes

If your child gets a wrong answer, ask them to prove that the answer is correct:

Be calm. Errors are opportunities to learn and can help children to keep trying! Trying again is an important quality for all learners to have.

If, however, your child becomes more frustrated and

less confident, stop. Ask them to tell you about the things they can do successfully. Remind them that they are capable. They have learned many things that have required patience and practice in the past and some took longer than others—riding a bicycle, writing a paragraph, speaking a second language, playing an instrument, or perfecting a dance routine.

Really helpful tip #2

Link math to your child's daily life!

Help your child to see that it is important to do this math problem, even if it is difficult. Give your child the time they need to work through the questions. Encourage them to do their best.

Team approach

Your child's teacher and other teaching team members are your partners in education. Use your child's journal to communicate with the teacher, and ask for strategies to use at home related to the topic and your child's learning style.

Really helpful tip #3

Talk about math careers and possibilities!

Learn together

If your child asks you 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 the problem is too difficult for you, admit it, then model determination by continuing to try to work it out.
- * If you continue to be unsuccessful, ask your child's teacher or other teaching team member for help. This will give your child permission to do the same when they are stuck.



Yes, you can really help your child succeed in math!

You can take a new lead!

A world of books

Look for math books at the library. Many high-quality children’s books, both fiction and non-fiction, tell interesting math stories:

For young children (kindergarten–grade 3), Tana Hoban’s photo books make math visible and support the development of a mathematical eye. They showcase geometry, numbers, and patterns at the park, on the sidewalk, on a construction site, or on a drive through city streets. These books highlight the fact that math is everywhere!

Really helpful tip #4

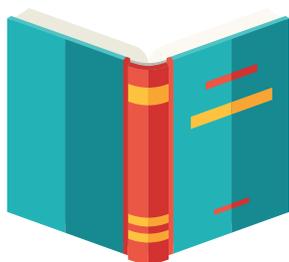
Have high expectations!



For older children (grades 4–6), many books make the most of a youngster’s love of humour and exaggeration:

* Two classics, *Counting on Frank* and *The Math Curse*, take the reader on whimsical journeys about numbers in everyday life.

* *The King’s Chessboard*, *Grain of Rice*, and *The Rajah’s Rice* deal with what happens when two grains of rice are placed on the first square of a chessboard—four on the second, and so on, doubling the amount for each subsequent square. These books illustrate multiplication and exponential numbers.



* Other books, like the interactive *Mathemagic: Number Tricks*, describe math tricks and give step-by-step instructions and explanations of how and why these number tricks work. As children work their way through each trick, they will learn math concepts including calculation, multiplication, the mysteries of the number 9, and more.

* An excellent book for grade 7/8 readers is *The Great Number Rumble*. It is the tale of a town that bans math in its schools. The book describes the lengths to which one boy, named Sam, goes to show the adults the folly of their decision.

For even more age-specific books that appeal to your child’s interests, ask your child’s teacher or your local librarian for suggestions. Don’t forget to seek out the many other book suggestions in this tool kit!

You can do informal math together!

During rainy days, family evenings, and vacation time, find opportunities to play math games and engage in informal math together. When you choose a game that is mathematical in nature, you show your child that math can be fun:

Toys

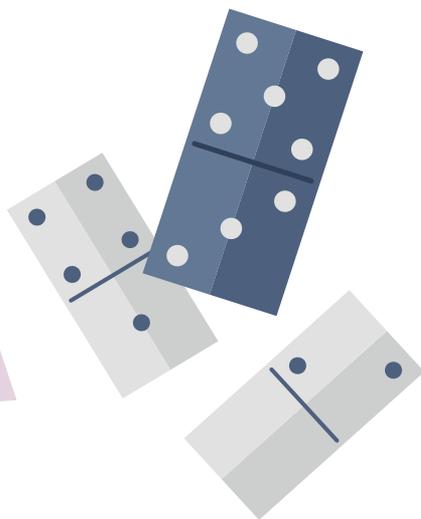
Toy stores have lots of choices, such as *Tangrams*, *Blockus*, *Equate*, *Mathopoly*, *Dino Math Tracks*, *Mancala*, *Dominoes*, and *Connect Four*.

Television

Watch educational television programs, such as *The Prime Radicals* on TVOntario or *Cyberchase* on PBS. These programs also have complementary websites with many activities to do together, including game apps, math crafts, and songs.

Really helpful tip #5

Support homework—but do not do it for your child!



Puzzles

Complete Sudoku puzzles together. You can use pictorial puzzles for young children and then graduate slowly to larger number grids with older children.

Talk math

Talk out loud about your problem-solving strategies.



Computer games

There are benefits to playing online games that encourage math skills and thinking process. These games have greater value than mainstream online games that are not designed for education. From a child's point of view, online games are interactive and fun, and make learning more enjoyable!

Select high quality online games, such as *Mathfrog*, *Calculation Nation*, or *The NCTM Illuminations Games*, to provide your children with opportunities to practice and extend what they learn in math class.



Really helpful tip #6

Be positive!

You can be a math career advisor!

Be clear and confident when using math in daily life.

Use personal examples to relate your experience to that of people who use math as part of their jobs.

Celebrate people who use math every day to do their jobs—carpenters, firefighters, nurses, engineers, computer programmers, and accountants.

Watch the weather forecast together. Talk about all the ways the meteorologist uses math—maps, tracking the speed of fronts, and giving the probability of precipitation for the coming days.

When you watch airplanes approach the runway, describe the job of air traffic controllers. This job uses precise mathematical measurements to guide jumbo jets to safe landings.

Stop and observe surveyors or sports field custodians as they use trundle wheels to measure distances and tracks.

Really helpful tip #7

Make math fun!

After watching the latest Hollywood animated blockbuster or playing an interactive video game, remind your child that math is the foundation of every motion and special effect. Math rotates and moves the characters, and it creates the special effects that make images shine and sparkle.

Make time to look carefully at the bridge you just drove over or the hammock in your backyard. There is a lot of geometry in a bridge and a hammock! The most obvious part is the triangle, which is geometry's strongest shape—a fact that engineers use to build all kinds of structures.

Call attention to a trail of footprints left in the mud. To the police, those footprints are evidence. The police use math to figure out the height and weight of criminals, how quickly they were running, and even the exact type of shoes the criminals were wearing!

Encourage students to take math courses throughout high school. The top 15 highest-earning college degrees all have one thing in common: math skills!



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