

# 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](http://ontariodirectors.ca/parent_engagement.html)

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# Module Four



Junior (Grades 4, 5, and 6)

## Counting Ahead

This module covers the following topics:

- Transition to junior division
- Attitude matters!
- “Math talk”—what to do when you don’t know what to do
- Read your child’s math textbook
- Finding extra support
- Financial literacy
- Making time for math fun!
- To sum up

## Transition to junior division

Grade 4 marks the beginning of a very important milestone in your child's math education: the start of junior division (grades 4, 5, and 6).

From kindergarten through the primary division (grades 1, 2, and 3), children are introduced to important vocabulary and symbols as they learn to read. Then beginning in grade 4, they are ready to "read to learn."

Similarly in math class, from kindergarten to grade three, children learn basic math facts, rules, and procedures. They also

learn important math vocabulary and symbols related to the five major 'strands' of the curriculum:

- \* Number sense and numeration
- \* Measurement
- \* Geometry and spatial sense
- \* Patterning and algebra
- \* Data management and probability

Parents and caregivers are not expected to be math experts. It will never be your responsibility to teach a specific math lesson. But you can help your child to stay motivated and develop a positive attitude!

During the junior division years, you might notice a big difference between your own experiences in math class and those of your children. There is new content now, such as probability. There are many words, diagrams, charts, and tables to interpret, and there are many connections to be made among “strands” and “representations.”

In junior division, children continue to build upon what they

already know about topics such as numbers, operations, and place value. They apply facts and rules to solve problems. They work with larger numbers and make connections among different kinds of numbers—for example, fractions, decimals, and percentages. Overall, they are getting better at writing and explaining their problem-solving methods—“inking one’s thinking.”

## Math content in junior division

Beginning in grade 4, children:

- \* Read, write, compare, add, subtract, multiply, and divide with large whole numbers.
- \* Are introduced to many new types of numbers, including decimals, prime numbers, and negative numbers.
- \* Learn about new number relationships, including ratios and exponents.

- \* Learn about new kinds of operations, including multiplying and dividing fractions, and doing long division.
- \* Use equations and formulas instead of number sentences.
- \* Begin to measure with more precision. They can find perimeter, area, and volume. They can use protractors to measure angles and compasses to make circles.

# Attitude matters!



Children in grades 4, 5, and 6 often recognize that big changes are happening in their math classes, but they might not understand why those changes are happening. As they reach the upper elementary grades, new demands lead many children to believe that suddenly math has become much harder, more boring, and unrewarding. These beliefs can affect their attitudes about, and achievement in, math class. Negative beliefs can increase stress and discourage learning.

When students are positive about math, they tend to be more motivated to learn (even from mistakes). They accept new ideas and try more challenging tasks. This, in turn, leads to improved self-esteem, confidence, creativity, and performance.

Remember that before children can become interested in math, they have to be comfortable with it. And before they can be comfortable with it, they must believe that they can succeed!



*I'm on the right track!*

Post this inspirational chart in your child's homework space

Refer to it when your child finds homework difficult, loses interest, or becomes negative.

## What Can I Say To Myself?

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### Instead of...

I'm not good at this.

I'm awesome at this.

I give up.

This is too hard.

I can't make this any better.

I just can't do math.

I made a mistake.

They are so smart. I will never be that smart.

It's good enough.

Plan A didn't work.

### Try thinking...

What am I missing?

I'm on the right track!

I'll use some of the strategies we've learned.

This may take some time and effort.

I can always improve, so I'll keep trying.

I'm going to train my brain in Math.

Mistakes help me to learn better.

I'm going to figure out how they do it so I can try it!

Is it really my best work?

Good thing the alphabet has 25 more letters!

## “Math talk” —what to do when you don’t know what to do

Math content has changed over the past few decades. It now includes many new topics, such as probability, algebra, and interpreting graphs. You might be totally unfamiliar with the exercises in your child’s homework and wonder what to tell your child, especially if you don’t remember learning this material when you were in school.

- \* First, remember that you are your child’s supporter and champion, but you are NOT expected to be the math teacher! You are not responsible for teaching math and

you shouldn’t feel pressure to do your child’s homework. In fact, doing homework for your child can encourage them to give up easily.

- \* Similarly, showing your child methods that are different from what they are learning in school can be confusing. When “your way” to do a math problem is different from “the teacher’s way,” your child might not know how to please both important experts in their life.
- \* When your child finds math exercises difficult, the best way to help is to talk. Children learn by talking, and they benefit more from homework when their parents get involved by listening and asking questions.

\* It is common for parents to “talk math” with younger children, and parents can talk math with older children, too:

**Ask what your child learned in math class today.**

**Ask your child to take you through the steps of solving a particular problem.**

Let your child take the “teacher” or “expert” role and teach you. This allows them to practice new skills and to clarify thinking about a subject. Often, they will realize that they know more than they thought.

\* Seeing a diagram like this in your child’s math notebook might be an opportunity for math talk:

|    |                |    |   |
|----|----------------|----|---|
|    | <b>14 x 33</b> |    |   |
|    | 30             | 3  |   |
| 10 | 300            | 30 | 330   |
| 4  | 120            | 12 | 132   |
|    |                |    | <hr style="width: 100%; border: 0.5px solid black;"/> 462 |

You might not be familiar with this method of doing multiplication problems, but it has become a standard way to teach children to multiply.

Ask your child to explain how the grid method works. Ask them to teach you how to multiply  $26 \times 85$  using the grid method. Check the answer with a calculator.

Be open to learning about the math exercises that your child is doing. For example:

\* If you see your child working on a math exercise, ask them what they are doing “because it looks interesting.”

\* Ask your child to teach you everything you need to know so that you can join in and do the exercise on your own.

\* Your child will likely refer to a table that lists the divisibility rules and some examples. When you think you understand the rules, ask your child to give you numbers to try on your own.

\* Ask your child to check your answers.

## Divisibility Rules Chart

| A number is divisible by...                                   | Divisible | Not Divisible |
|---|-----------|---------------|
| <b>2</b> if the last digit is even (0, 2, 4, 6 or 8).         | 3 978     | 4 975         |
| <b>3</b> if the sum of the digits is divisible by 3.          | 315       | 139           |
| <b>4</b> if the last two digits form a number divisible by 4. | 8 512     | 7 518         |
| <b>5</b> if the last digit is 0 or 5.                         | 14 975    | 10 978        |
| <b>6</b> if the number is divisible by both 2 and 3.          | 48        | 20            |
| <b>9</b> if the sum of the digits is divisible by 9.          | 711       | 93            |
| <b>10</b> if the last digit is 0.                             | 15 990    | 10 536        |

When your child says that their homework is finished, ask to look at their solution. Did they use words, numbers, and diagrams (such as charts, tables and illustrations) to explain their work? The example below (from the grade 5 Ontario Math Exemplars) is a complete and correct solution to a math problem:

Sarah wants to build a stone wall along one side of her garage. Sarah collects stones from the field behind her house. The first day, Sarah collects four small stones and five large stones. The second day, Sarah collects eight small stones and eight large stones. The third day, Sarah collects twelve small stones and eleven large stones. If this pattern continues, how many small and large stones does Sarah collect on the tenth

day? Sarah realizes that she now has enough small and large stones for her stone wall. How many small and large stones does Sarah collect for the stone wall? Show all your mathematical thinking.

- \* As your child talks through the steps, write down the words so that together you create a complete written description of their thinking processes. This record will give your child something to look back on—to review or to fix a mistake.
- \* This will help your child recognize what good work looks like and how to take simple steps to improve the work. They can use it to generate more complete solutions in the future.

## Bring the classroom into your home.

If you visit your child's classroom, take photos of the examples, posters, and whiteboard displays used by the teacher.

## Print out your photos.

You can refer to them when you ask your child to tell you about math lessons.

Keep the print-outs in a reference notebook that you and your child put together during the school year. Alternately, if the class has a website, ask the teacher to post photos.



# Read your child's math textbook

Textbooks and dictionaries provide many examples, links to the real world, and opportunities to practice skills and problem-solving strategies. Spend time reading your child's textbook and discovering its wealth of information. This is a valuable activity that you and your child can do together.

Use the textbook as a reference tool and not just as a source of homework exercises.

Textbooks have special features, such as an illustrated glossary and special graphics, text boxes, and examples to explain concepts. There is no unnecessary text in a math textbook. All of the illustrations, explanations, and exercises work together.

Many textbooks have common elements. For example, learning goals and key vocabulary are introduced at the beginning

of each chapter. Each multiple-page lesson is organized in a standard way that lets your child explore a concept informally. Practice the concept or strategy; apply the concept to a math problem; and apply what they have learned through games, enrichment activities, and technology.

## Finding extra support

It is very important that children are able to work at grade level by the end of the junior division. If, in spite of your support, your child is struggling, showing signs of stress, or, most importantly, a lack of enthusiasm:

- \* Reach out to your child's teacher sooner rather than later. Explain that you

believe your child has been having a hard time with certain assignments and needs more help. Ask for constructive suggestions.

- \* Ask if the school has a peer tutoring program. Can local high school students earn community service hours by providing free tutoring? Many universities and community colleges require candidates in early childhood education and teaching to participate in outreach activities that could benefit your child.



# Financial literacy

Junior division, when children are 9 to 11 years old, is the perfect time to build financial literacy into math activities at home. Children can learn to manage money and see a real-world context for decimals, percentages, and proportional reasoning.

- \* Many children earn an allowance in return for household responsibilities (walking the dog, taking out the garbage, raking the leaves), but not many children have a bank account. Making an appointment at your local bank to open an account can also

teach your child how interest works, in terms of both saving and borrowing.

- \* Involve your child in household budgeting—for example, finding out the costs of buying and caring for a pet, going to a movie, or learning about the benefits of saving for both short- and long-term goals. You and your child can make buying decisions together by doing research and comparing products.



**Many excellent resources are available at no cost on the internet:**

- 🕐 An *Avengers* digital comic book combines saving money and saving the day. The digital comic is available in eight languages. It contains a budget blaster worksheet to help children track spending and create their own personal budgets.

[www.practicalmoney skills.ca/avengers](http://www.practicalmoney skills.ca/avengers)

- 🕐 The same resource gives interactive examples of budgets, including the budget of a grade 6 student named Alex.

**There are many opportunities in daily life for your child to learn more about financial literacy. For example, ask your child to consider the following scenario:**

- 🕐 You want to buy a jacket that is on sale for \$49.95. If you are paid \$2.75 an hour for babysitting, how many hours will you have to babysit in order to earn enough money to pay for the jacket?
- 🕐 Your neighbour will pay you \$7.50 to wash the car. Now how many hours of babysitting will you have to do to pay for the jacket?
- 🕐 If you had a job that paid minimum wage, how many hours would you have to work to buy the jacket for \$49.95?
- 🕐 If you decide that \$49.95 is too much to pay, what does that tell you about the value of the jacket to you?

# Making time for math fun!

Anyone who has ever watched a magic show has probably asked “how did they do that?” after seeing an amazing trick. Many magic tricks have roots in math, so through sleight of hand and a few basic math concepts, you and your children can learn to perform seemingly impossible “tricks.”

- \* It is important to show your child that math can be fun!
- \* When there is no assigned homework, or when your child is discouraged or bored, make time for math fun by planning a family mathemagic show featuring your child the amazing mathemagician! Math magic

books can be found in the non-fiction section of your local school or community library.

**Teach your child a few surprising math tricks that you have up your sleeve, including this mysterious number 9 method of multiplication:**

- \* Hold up your hands with palms facing you. Number your fingers from left to right as “1” to “10.”



- \* Hold down the finger of the number you want to multiply by nine. In this example, we want to multiply “9 x 7,” so we drop the seventh finger.



- \* The fingers to the left of the dropped digit are the tens and the fingers to the right are units (ones). In this example, there are six fingers to the left and three to the right: “ $7 \times 9 = 63$ .” It works!

**Want another amazing example? Try multiplying “ $3 \times 9$ ” using your fingers:**

- \* Drop finger number three. There are two fingers to the left and seven to the right: “ $3 \times 9 = 27$ .”



**Try this trick with all of the other numbers in the nine times table!**

- \* One of the best ways to teach math is to help children learn something that they enjoy showing to people. If they have fun, they own the experience. If they are not having fun, they won't commit themselves and they won't practice or learn.

For example, mathematical mind-reading tricks like this one encourage computational practice:

- \* Ask your child to think of a secret number between 1 and 100.
- \* Ask them to multiply their age by two, add five, multiply by 50, and subtract 365.



- \* Next, ask them to add their original secret number, then add 115 to the total.
- \* While you say “**Mathakazam!**” tell them that the first half of the final number is their age and the other half is their secret number!
- \* Encourage them to try the trick on other adults—including their teacher!

## To sum up

Remember to praise your child’s efforts. Remind your child that in math class, and life in general, practice (and persistence and a good attitude) really do make perfect!

When you work together, you and your child will often discover new ways of thinking about a problem that you both might have overlooked if you had worked on it alone.

You and other caring adults, including teachers, are your child’s trusted and comforting supporters. Having this kind of support is important. It can make learning more enjoyable and therefore help your child to be more successful!

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Council of Ontario Directors of Education

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