Hamilton-Wentworth Catholic District School Board

Helping Parents Engage Their Children in Mathematics

"If you want your children to be literate, use a lot of words. If you want them to be numerate, fill their world with numbers." ~ Rick Ackerly

Bringing Numeracy to Life at Home:

There are many things your can do with your child at home to help them see and do math in everyday routines and events. Below is a list of fifteen things you can do with your child to bring numeracy to life:

1. Help your child develop a **growth mindset** about math (see below).
2. **Talk about math and point out ways you use math everyday**. As much as possible, use math words. Create a learning environment in an easy to access place (e.g. your kitchen table) and hang a whiteboard/chalkboard and calendar there. These can be used when talking about math.
3. **Do math out loud**. Add, subtract, multiply, divide, estimate…do it out loud so your child can hear your thinking.
4. **Count with your child**. Count everything: steps, carrots, books on a shelf… Count by 1s, 2s, 5s, 10s. Start at 1 sometimes, other times start at a random number, like 13.
5. **Mount an outdoor thermometer outside a window**. Show your child how to use it. Have your child do the 'weather report' each morning. Make a table with your child and have him/her record the temperature, including units, each day. Compare the temperatures. Talk about greater than and less than.
6. **Talk about the position of one item in relation to another item**. For example, "The book is **in front** of the game. The plate is **on** the table. The dog is **under** the bed. The coat is **to the right** of the door."
7. **Use the units of measurement when talking about them**. Remember, in school we use the metric system so as much as possible talk in mm, cm, m, and km, and g and kg.
8. **Talk about the graphs and data that are present in the newspapers and news**. Discuss the different ways data can be represented and encourage your child to ask questions to determine what the data means.
9. **Play games that involve math with your child**. Games that use dice and spinners (e.g., hopscotch, Snakes and Ladders, Sorry, and Trouble) help with counting. Games using playing cards (e.g., Snap and War) help with comparing and ordering numbers. Games that use strategy (e.g. Guess Who, Labyrinth, Checkers, Sequence and Chess) help develop logic. Puzzles, Blokus, Pentomino, Rush Hour, Q-Bitz, and Tetris help with spatial reasoning. Monopoly and Life help with currency. Battleship helps children get familiar with the coordinate grid system.

10. **Make fractions part of your daily life.** Use them when cooking, dividing up a cake, comparing who ate the most pizza…
11. **When shopping with your child involve him/her in determining the cost** or what deal is the better deal…estimating is a valuable skill to learn.

12. **Point out patterns everywhere**…in nature, shapes, floor tiles, numbers…
13. **Read stories to them with math themes** (refer to the list below).
14. **Wonder how far something is or how high it is**. Estimate the heights, widths, weights, and volumes of things, then compare with measurements.
15. **Talk to your child about the math that they do** (e.g. solving a puzzle, dividing up cookies among friends). Some questions you could ask, "What did you do? Why did you do that? How it did it help? When could you use it again? Is there another way to do it?"

Growth Mindset and Math

A person with a growth mindset recognizes that intelligence is changeable. New ideas/concepts can be learned through hard work and effort. Challenges, obstacles and mistakes are learning opportunities and important parts of the learning process. Having a growth mindset has been shown to improve student achievement, particularly in math.

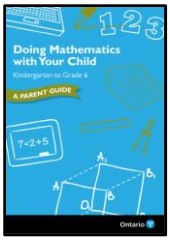
Four things you can do at home to foster a growth mindset:

- When praising your child, focus on the effort, perseverance, determination, and 'stick-to-it-ness' your child demonstrated when solving a problem, not his/her ability to get it right. For example, try, "I saw how hard much you worked at that problem. I could see it was challenging, but you kept trying. That's wonderful!" as opposed to, "You got the right answer…you're so smart!"
- Help your child see that a 'mistake' is really a learning opportunity. Have your child determine why he/she got the answer he/she did and then encourage them to try again.
- Remember the power of 'yet'…if your child gets discouraged about an idea/concept/problem in math and says, "I can't do it!" add the word "yet" to the sentence. Acknowledge that the idea/concept/problem is challenging, but reinforce the idea that through hard work and effort they will be able to do it. Offer hints or alternative strategies to offset frustration.
- Avoid exposing any negative feelings you have towards math to your child.

Online Math Resources

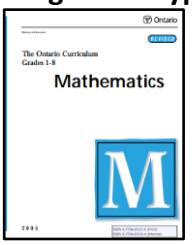
The following is a list of online math resources that parents and their children to explore together. Some of these sites will support parents in understanding the math their children are learning in schools and some are sites that have math activities for their children to engage in.

Online Math Resources from the Ontario Government (images are hyperlinked to the documents):

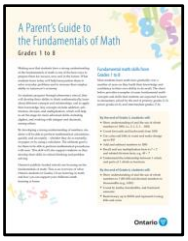


A Parent Guide: Doing Mathematics with Your Child (K to 6)

The Kindergarten Program (2016)



The Ontario Curriculum Grade 1–8 Mathematics



A Parent's Guide to the Fundamentals of Math, Grades 1 to 8

Other Online Math Resources (web images are hyperlinked to the website):

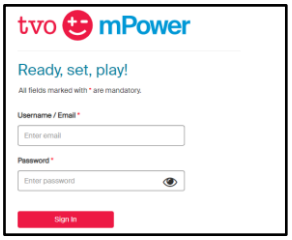
Mathies: This site is designed for Ontario K-12 students and parents. It has games, learning tools and additional supports for parents in the Home Supports section. → https://mathies.ca/

Mathies Home Supports: WINS – Working in Number Sense: This part of the mathies.ca site offers parents a large selection of activities to do with their Kindergarten to Grade 3 children. → https://mathies.ca/activitiesTogether.html#WINS

StrADDegy: This site has a wide variety of games and activities that will support Kindergarten to Grade 3 students in developing their number sense. This is a teacher resource, however its creator has given us permission for the HWCDSB parents to access its materials. Click on one of the five modules, and select from the resources found in the 'Learning Experiences' under the orange 'Trust' tab and the 'Digital Games' and 'Problem Bank' under the green 'Own' tab. Some games can be played online on a computer or tablet, however most are designed to be printed off and played (materials needed are indicated). Here is a suggestion of which module to focus on for each grade:
Kindergarten: Count Ons and Number Bonds to 10
Grades 1 – 2: Count Ons, Think Doubles, Number Bonds to 10
Grade 3: Think Doubles, Ten and Some More, Make Ten
→ https://tinyurl.com/StrADDegyHWCDSB

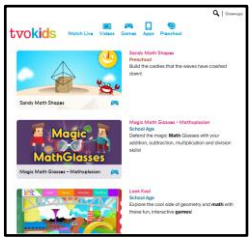
Pearson Mathology Little Books: The books found on this site are designed to support students in Kindergarten to Grade 3 in learning critical thinking, problem solving and the ability to communicate mathematically. New books will be added every week. → https://www.pearsoncanadaschool.com/index.cfm?locator=PS3e1i

TVO mPower: This is a fun and innovative online game-based resource that builds problem-solving, critical thinking and math skills for students in Kindergarten to Grade 6. → https://mpower.tvo.org/#/login/



TVO Kids: This site offers students in Kindergarten to Grade 6 a number of games on a wide variety of subjects and concepts. → https://www.tvokids.com/school-age/games

To find math games, click here: https://www.tvokids.com/school-age/search/math%2Bgames



Bedtime Math: This site's mission is to help kids love numbers so that they can handle the math in real life. It offers math problems to think about and discuss, just before bed. For Kindergarten to Grade 6 students. → http://bedtimemath.org/

Talking Math with Your Kids: This website helps parents with children in Kindergarten to Grade 8 learn how they can have rich mathematical conversations with their children in everyday life situations. → https://talkingmathwithkids.com/

Youcubed: This site has supports for parents and students about developing positive mathematical mindsets. There are a plethora of tasks for students in Kindergarten to Grade 8. → https://www.youcubed.org

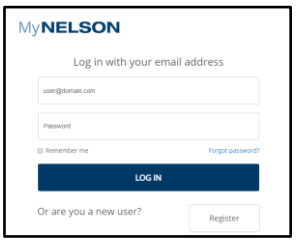
Prodigy: This is a self-paced math game used to practice math skills for students in Grades 1 to 8. → https://play.prodigygame.com/

Ken Ken – Puzzles That Make You Smarter: For students in Grades 1 to 8, these online number puzzles incorporate math facts. → http://www.kenkenpuzzle.com

Estimation180: For students in Grades 1 to 8, these estimation prompts help children refine and hone their estimation skills. → http://www.estimation180.com/

Math Playground: For students in Grades 1 to 6, this site contains online math games to practice math concepts. → http://www.mathplayground.com

Nelson emath+: This site offers curriculum support for Grades 3-6 → www.mynelson.com. Students in Grades 3 to 6 can login using the credentials shared at school.

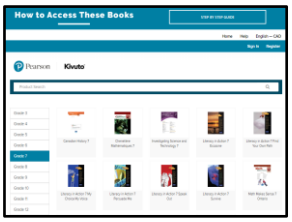


CEMC: The CENTRE for EDUCATION in MATHEMATICS and COMPUTING has developed supports for students in Grades 3 to 12. They hope to post new items each day throughout the week. Resources include games, problems, applications and videos. → https://cemc.uwaterloo.ca/resources/cemc-at-home.php

TVO Mathify: Live one-on-one tutoring site for students in Grades 6 to 10 with qualified Ontario Teachers as tutors. Tutors are available Monday to Friday from 9:00 a.m. to 9:00 p.m., and Sunday from 3:30 p.m. to 9:00 p.m. Students access Mathify through myClass found on mySite. → http://mysite.hwcdsb.ca

Pearson Canada Math Makes Sense eText: This site will provide Grade 7 and 8 students with free electronic access to their Math Makes Sense textbook. Once on the site, click on either Grade 7 or 8 and select the Math Makes Sense 7/8 Ontario image. Follow the instructions to register for the resource. → https://pearsonathome.onthehub.com/WebStore/ProductsByMajorVersionList.aspx

Click here for a step-by-step guide to registering and accessing the etexts. → https://kivuto.com/wp-content/uploads/2020/03/pearson-texidium-faq.pdf



Manipulatives

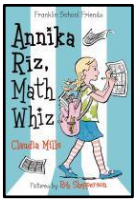
Manipulatives are objects that help students learn math. They are integral to math as using manipulatives help students visualize, think, and reason their way through math concepts. Some examples of manipulatives are: counters, spinners, tangrams, pattern blocks, fraction circles, base ten blocks, number lines, 100s chart, and geoboards. Manipulatives are readily available in your home, at the dollar store, and online:

a) **mathies Learning Tools:** mathies.ca
b) **McGraw Hill Online Manipulatives:** http://www.glencoe.com/sites/common_assets/mathematics/ebook_assets/vmf/VMF-Interface.html

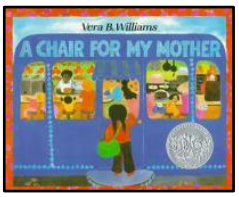
Link Numeracy to Literacy

The following books are just a few of the many books out there involving math themes. Almost all of these books are **available through the Hamilton Public Library (HPL).** The brief descriptions are from the Hamilton Public Library as well. The recommended audience for the book is indicated in the brackets at the end of the description (i.e., K:

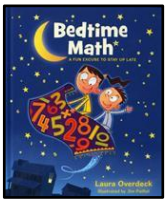
kindergarten, P: primary, J: junior, I: intermediate). The books denoted with an * after the audience recommendations are **not available** from the HPL.



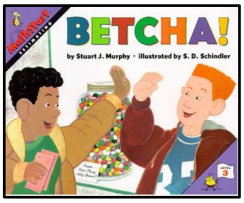
Annika Riz, Math Whiz. Mills, Claudia. (2014) - Annika hopes to change her best friends' hatred of math by winning a Sudoku contest, but she does not realize how important their lack of mathematical ability is until they make a mistake at the school carnival. (J)



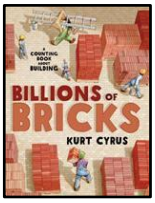
A Chair for My Mother. Williams, V. (1982) – A child, her mother, and her grandmother save their dimes to buy a comfortable armchair after all their furniture is lost in a fire. (K, P)



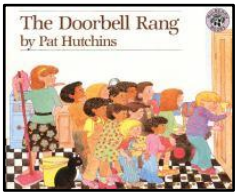
Bedtime Math. Overdeck, Laura. (2013) - Inside this book, families will find fun, mischief-making math problems to tackle--math that isn't just kid-friendly, but actually kid-appealing. With three different levels of challenge (wee ones, little kids, and big kids), there's something for everyone. (P, J)



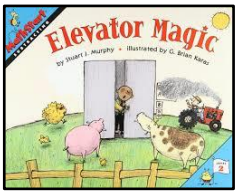
Betcha. Murphy, S. J. (1997) – Uses a dialog between two friends, one who estimates, one who counts precisely, to show estimation at work in everyday life. (K, P) *



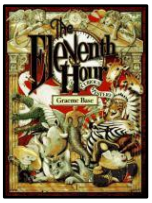
Billions of Bricks. Cyrus, K. (2016) – The piles of bricks grow quickly in this rhyming book. (J)



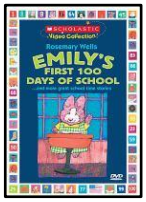
The Doorbell Rang. Hutchins, P. (1986) – Each time the doorbell rings, there are more people who have come to share Ma's wonderful cookies. (K, P)



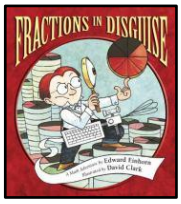
Elevator Magic. Murphy, S. J. (1997) – Elevator Magic explains the concept of subtraction through a rhyming text about a descending elevator. (K, P) *



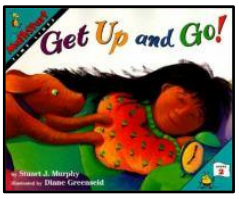
The Eleventh Hour: A Curious Mystery. Base, G. (1989) – When the special feast that was to be eaten at the elephant's eleventh birthday party is stole, the reader is invited to guess the identity of the thief. (K, P)



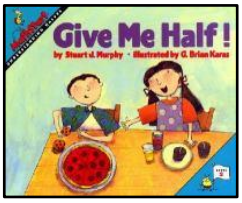
Emily's First 100 Days of School. Wells, R. (2000) – Starting with number one for the first day of school, Emily learns the numbers to one hundred in many different ways. (K, P)



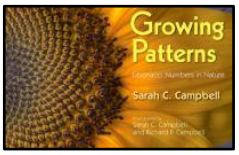
Fractions in Disguise: A Math Adventure. Einhorn, Edward (2014) - When a valuable fraction goes missing, young inventor George Cornelius Factor, suspecting the work of the villainous Dr. Brok, creates a tool for simplifying and revealing fractions that have been sneakily disguised. (J, I)



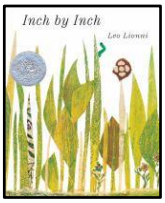
Get Up and Go! Murphy, S. J. 1996) – Explains through the use of rhyme the concepts of timelines and addition as a girl gets ready for school with the help of her smart dog. (K, P)



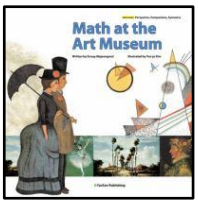
Give Me Half. Murphy, S. J. (1996) – Introduces the concept of halves using a simple rhyming story about a brother and sister who do not want to share their food. (K, P)



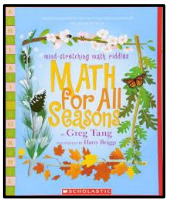
Growing Patterns. Campbell, S. (2010) – This book introduces children to the Fibonacci sequence through a series of stunning photographs of daisies, pinecones, leaf patterns, seashells and more. (J, I)



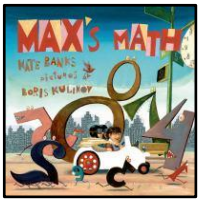
Inch by Inch. Lionni, L. (1995) – To keep from being eaten, an inchworm measures a robin's tail, a flamingo's neck, a toucan's beak, a heron's leg, and a nightingale's song. (K, P)



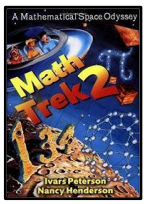
Math at the Art Museum. (2015) – By exploring painting and other masterpieces, a young boy discovers that math in art is brilliant – and beautiful! (J)



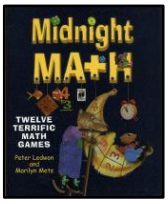
Math for All Seasons. Mind-stretching Math Riddles. Tang, Greg. (2001) - An uproariously punny math book with a theme of seasons and a focus on groups of fives. By looking for patterns, symmetries, and familiar number combinations within eye-catching pictures, math will become easier, quicker, and more fun than anyone could have imagined! (J, I) *



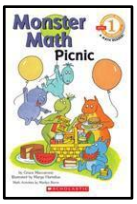
Max's Math. Banks, K. (2015) – Max and his brother are able to use their skills in arithmetic and sleuthing to help get things ready for a rocket launch in Shapeville and Count Town. (J)



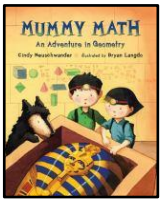
Math Trek 2: A Mathematical Space Odyssey. Peterson, Ivars. (2001) - Take a wild and Wonderful Voyage Through the Universe of Mathematics! While playing games and solving puzzles, you can explore mind-boggling mental mysteries and investigate hidden patterns in the universe. (J, I) *



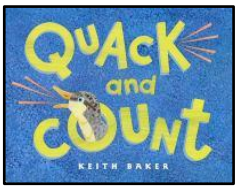
Midnight Math. Ledwon, P., & Mets, M. (2000) – Animal characters help readers paly twelve different math games. (K, P)



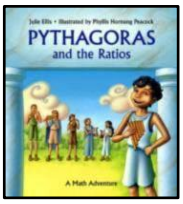
Monster Math Picnic. Maccarone, G. (1998) – Monsters go on a picnic and engage in various activities – they number of monsters always add up to 10. (K, P)



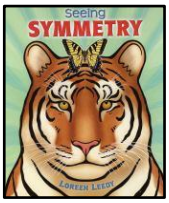
Mummy Math, An Adventure in Geometry. Neuschwander, Cindy. (2009) - The Zills family is summoned to Egypt to help find the hidden burial chamber of an ancient pharaoh. But when Matt and Bibi get trapped in the pharaoh's pyramid, they stumble upon an even bigger mystery. Luckily, Matt and Bibi know their stuff when it comes to geometric solids, and so will the readers of this adventure in math! (J)



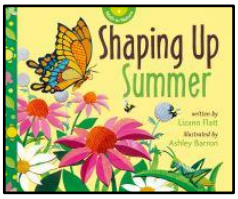
Quack and Count. Baker, Keith. (1999) – Seven ducks are shown in a variety of configurations: 7 and 0, 6 and 1, 5 and 2, etc. They practice counting and adding. (K, P)



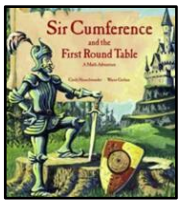
Pythagoras and the Ratios: A Math Adventure. Ellis, Julie. (2010) - An ancient Greek boy, Pythagoras, helps his cousins produce pleasant music when he adjusts the mathematical ratios between the part of their pipes and lyres, knowledge he would later use to become a famous philosopher. (I)



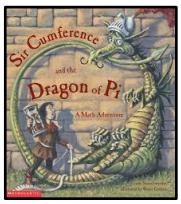
Seeing Symmetry. Leedy, Loreen. (2012) - Once you start looking, you can find symmetry all around you. It's in nature, art, design, decoration, and architecture. This book explains different types of symmetry and shows you how to make your own symmetrical masterpieces. (K, P, J, I)



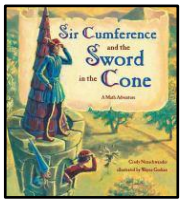
Shaping Up Summer. Flatt, L. (104) –This book introduces concepts of geometry and spatial sense by examining things related to summer. (J)



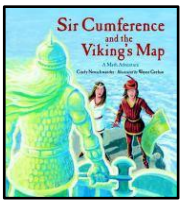
Sir Cumference and the First Round Table: A Math Adventure. Neuschwander, Cindy. (1997) - Assisted by his knight, Sir Cumference, and using ideas offered by his wife and son, King Arthur finds the perfect shape for his table. (J, I)



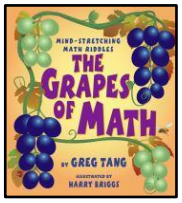
Sir Cumference and the Dragon of Pi: A Math Adventure. Neuschwander, Cindy. (1999) - When Sir Cumference drinks a potion which turns him into a dragon, his son Radius searches for the magic number known as pi which will restore him to his former shape. (J, I)



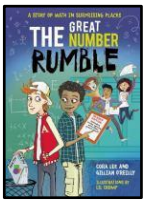
Sir Cumference and the Sword in the Cone: A Math Adventure. Neuschwander, Cindy. (2003) - Sir Cumference, Radius, and Sir Vertex search for Edgecalibur, the sword that King Arthur has hidden in a geometric solid. (J, I)



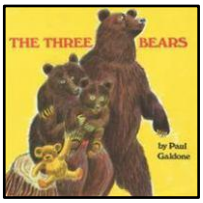
Sir Cumference and the Viking's Map: A Math Adventure. Neuschwander, Cindy. (2012) - As bungling bandits pursue them, cousins Radius and Per use coordinate geometry in their quest for treasure as they decode the map of the Viking warrior Xaxon Yellowbearyd. (J, I)



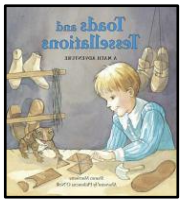
The Grapes of Math. Mind-stretching Math Riddles. Tang, Greg. (2001) - Illustrated riddles introduce strategies for solving a variety of math problems in using visual clues. (J, I)



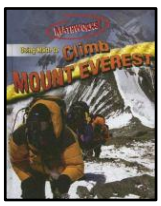
The Great Number Rumble. Lee, C. (2016) – When the schools in Jeremy's town ban math, all the kids cheer, except Jeremy, who sets out to prove that math is not only important, but fun. (J)



The Three Bears. – In any version of the traditional story, children can engage in activities to develop the concept of the number 3 as well as comparisons of small, medium, and large. (FDK, P)



Toads and Tessellations: A Math Adventure. Morrisette, S. (2012) - Even for an apprentice magician Enzo is not very good--but when Tessel the shoemaker needs to use a single piece of leather to make twelve sets of shoes, Enzo finds that when magic fails, math may solve the problem. (J, I)



Using Math to Climb Mount Everest. Koll, Hilary. (2007) - Mathworks! motivates students by relating math concepts and skills to real life situations. A wealth of problem-solving activities build math skills while the colourful, high-interest approach engages students and encourages them to think about math in new ways. (J, I)