

# Math Mentor Program

Offered by McMaster Women in Mathematics (MWM), and supported by the Department of Mathematics and Statistics at McMaster University, this program is an exciting new initiative that brings our favorite pieces of mathematics to girls in grades 9-12. We hope to create opportunities for our mentees to explore mathematics, showcase their work--and of course, to have fun!



## What do art, games, reason and the real world all have in common?

Math, of course! Mathematics is so much more than just numbers; it's filled with mind-boggling paradoxes, beautiful symmetries, and applications to everything from game strategy to deep learning! If you've ever wanted to explore math's beautiful structures, or see more of its applications in a fun, engaging environment, then **this program is for you!**

We are inviting **enthusiastic** high school students to join us for a **FREE** one-semester (virtual) mentorship program. The program consists of one-hour bi-weekly mentorship meetings, some independent work in the off-weeks, and the chance to construct a project on an interesting area of mathematics. **Interested? Keep reading!**

## Our Program Streams



### History & Art of Math

Do you like creating and exploring? Join us and explore the great mathematical discoveries throughout history, or explore the mathematics of creativity! See how mathematics appears in the art we admire.

### Data Science & Security

Have you ever wondered how Google decides what to advertise to you? Or maybe you're alarmed by how much information they know about you. Perhaps you want to understand how a computer determines what's in an image. Whichever side interests you, you can explore the math used to make these and other predictions!





# Timeline & Logistics

**Program Starts:** January 2021

**Program Ends:** May 2021

**Time Commitment:** 1hr/week, either in meetings or exploratory independent work

**Applications Due:** Nov. 30, 2020

**Admissions:** Dec. 20, 2020

We will inform you of our admission decision via email.



## Fun & Games

Do you want to master the Rubik's cube? Or how about an infinite game of chess? Maybe you want to relax and play connect the dots instead. Recreational games such as these have strong mathematics underlying them, and you can explore how to use math to find the optimal winning strategy!

## Logic & Paradoxes

Have you ever wondered how we know that  $0=0$ ? Or how big infinity really is? How do we know the exact point where finite ends and infinite begins? Explore how mathematicians determine what is true and what isn't in an exciting project on logic!



## How does it work?



The Math Mentor Program has three fundamental components; mentorship, exploration and the showcase. In the **mentorship** part of the program, mentees are paired with a student in the math department at McMaster University to play with a topic of interest to the both of them. Mentees will also be able to **explore** material on their own or in teams. At the end of the program, create something new that represents what you've been working on, and **showcase** it to other mentees. Whether you're interested in data science, game theory, or just love a good problem--we have a program that's right for you!

## Want to get involved?

### Who can apply?

If you are a grade 9 - 12 girl, you are eligible for admission! Our programs vary in terms of their minimal requirements, so before filling out an application be sure to visit our website, below:

<https://sites.google.com/view/mathmentorprogram>

### What happens to my application?

Once you have applied, we will look for a mentor match between you and the mentors in our program. Admissions will be made based on abilities to meet minimal requirements indicated by the program, and the personality matches between mentees and mentors.

**McMaster Women in Mathematics**

If you have any questions, please contact the co-organizers Julie Jenkins ([jenkinsj@mcmaster.ca](mailto:jenkinsj@mcmaster.ca)) or Lindsay White ([whitela3@mcmaster.ca](mailto:whitela3@mcmaster.ca)) for more details.