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Mathematics  
and Statistics

# MICRO MATHEMATICIANS

Year 7/8

Virtual After School Extension Program

**Term 1:**

**Tuesday, April 27th - Tuesday, June 15th 2021**

**4pm - 5pm**

# ABOUT

Micro Mathematicians is a free after school extension program aimed at students who love maths. Students will get to explore mathematical problems at a deep level following the inquiry process.

The program will run using a virtual environment (Zoom and Google Classroom) and students will have 1 hour each week with the University of Melbourne, School of Mathematics and Statistics Outreach Team. Students will be given additional activities to complete in their own time.

## WHAT WILL STUDENTS BE DOING?

Students will take part in a variety of activities designed to promote mathematical investigation at a high level. Some of the key mathematical areas we will focus on include, but are not limited to; Number Theory, Data Analysis, Combinatorics, Geometry & Topology and Mathematical Biology. Activities include:

- **Problem solving:** engaging with challenging problems through various approaches like modelling, collaborative discussion, construction, proof, and arts and crafts. Activities are open ended to allow students to extend the activity as far as they like and in any direction they choose.
- **Extended Research Project:** working on an extended project across two weeks. Students can choose between a range of provided problems. Problems are broad and students will need to decide how to narrow the problem down, in what direction they wish to take the problem, what information they will need to answer the problem and what is a suitable approach.
- **Research Presentations:** Students will be required to present their mathematical research to each other, focusing on the methods they used, the results they concluded, and the questions that still remain open.
- **Debate:** Engage in mathematical discussions. Students will take part in group debates where they will argue difficult topics within the field of mathematics.

## LEARNING GOALS

While the primary goal is to offer extension in mathematics, we will also be addressing skills in communication, collaboration, and literacy.

## ASSUMED KNOWLEDGE

This program is designed for Year 7/8 students working **1-2 years ahead**. They should be comfortable with the following skills (Victorian Curriculum linked):

- Use index notation with numbers to establish the index laws with positive integral indices and the zero index (VCMNA272)
- Investigate the concept of irrational numbers, including  $\pi$  (VCMNA275)
- Factorise algebraic expressions by identifying numerical factors (VCMNA280)
- Investigate the relationship between features of circles such as circumference, area, radius and diameter. Use formulas to solve problems involving determining radius, diameter, circumference and area from each other (VCMMG288)
- Develop the conditions for congruence of triangles (VCMMG292)
- Describe events using language of 'at least', exclusive 'or' (A or B but not both), inclusive 'or' (A or B or both) and 'and' (VCMSP295)

## WHO WILL STUDENTS BE WORKING WITH?

The after school program will be run by passionate Teachers and Mathematicians who are members of the Outreach Team in the School of Mathematics & Statistics at the University of Melbourne.

# DETAILS

**Date:** 8 Tuesdays, starting April 27th and ending June 15th 2021

**Time:** 4pm-5pm

**Location:** Online, via Zoom and Google Classroom

**Cost:** Free

**Materials required:** pencil, colour pencils, ruler, rubber, scissors, glue stick, notebook, online access (computer/laptop, internet, Google Classroom, Zoom, webcam, microphone).

## REGISTRATION

Do you have a student who would benefit from this program? If so, please pass on this information to the relevant parents/guardian so their child can complete the admission test. Please note, completing the admission test does not guarantee a place in the program.

**Admission Test:** <https://forms.gle/nMfLuwC7aSyxrVsYA>

Please submit admission test by Friday March 5th 2021.

## UPCOMING SESSIONS

There will be additional Micro Mathematicians programs this year. Details will be provided closer to the time. If you are unsuccessful in gaining a place in this program, please do not hesitate to try again for our next program.

## CONTACT INFORMATION

For further information, please contact Hayley Ellul.

School of Mathematics and Statistics

University of Melbourne

**Email:** [hayley.ellul@unimelb.edu.au](mailto:hayley.ellul@unimelb.edu.au)