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Mathematics  
and Statistics

# MICRO MATHEMATICIANS

Year 9/10

Virtual After School Extension Program

**Term 1:**

**Wednesday, April 28th - Wednesday, June 16th 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 and collaboration.

# ASSUMED KNOWLEDGE

This program is designed for Year 9/10 students working **1-2 years ahead**. They should be comfortable with the following skills (Australian Curriculum linked):

- Find the value of the subject of the formula, given the values of the other pronumerals in the formula. (ACMGM011)
- Calculate the surface areas of standard three-dimensional objects such as spheres, rectangular prisms, cylinders, cones, pyramids and composites in practical situations. (ACMGM020)
- Interpret, in context, the slope and intercept of a straight-line graph used to model and analyse a practical situation. (ACMGM042)
- Solve practical problems that involve finding the point of intersection of two straight-line graphs. (ACMGM045)
- Deduce a rule for the  $n$ th term of a particular arithmetic sequence from the pattern of the terms in an arithmetic sequence, and use this rule to make predictions. (ACMGM069)
- Use geometric sequences to model and analyse (numerically, or graphically) practical problems involving geometric growth and decay. (ACMGM074)

## 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 Wednesdays, starting April 28th and ending June 16th 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/8Y9PGEvHjmYB3Z3x5>

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

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