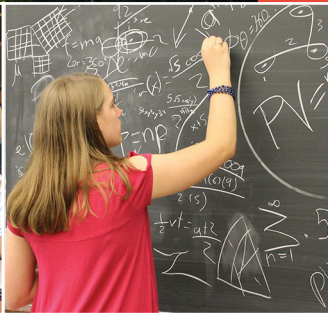summer illinois mathematics camp summer math

SUMMER ILLINOIS MATH CAMP

DEPARTMENT OF MATHEMATICS
University of Illinois at Urbana-Champaign

SIM Camp Epsilon, June 10-14, 2019

- For students starting 8th or 9th grade Fall 2019, ages 12-15
- Open to students who will begin geometry or algebra in the fall

Not your childhood tic-tac-toe: Low dimensional topology and games.
Students will explore possible shapes of a two dimensional universe, with a strong focus on the topology of the torus, sphere, and Klein bottle. We will play connect four on a cylinder, tic-tac-toe on the torus, and hide-and-seek on the non-oriented Klein bottle. Students will discover the theory of games, asking questions like "how many first moves are there in torus tic-tac-toe?" or "does the 'it' player have an unfair advantage in Klein bottle hide-and-seek?"

Making and breaking codes: Cryptography. Students will learn how to write and read secret messages using modular arithmetic or "clock math." We will practice sending each other messages with each method, as well as answer questions like "how can you read a message without knowing the code?" and "how can you share a code without other people being able to read the message?"

SIM Camp Delta, June 17-21, 2019

- For students starting 9th or 10th grade Fall 2019, ages 13-16
- Open to students who have taken at least one year of algebra

Number theory and cryptology: Number theory is a broad subject that looks at why natural numbers behave the way they do. Many ancient societies used math that is now considered number theory to find the side lengths of right triangles. Despite the seeming simplicity of the natural numbers, this is still an area of active research. SIM Camp students will look at some basic properties of prime numbers and how they can be used to encrypt messages. This is a high school version of the cryptology course.

When a straight line curves: The geometries of space. Students will explore questions such as, "What happens when the angles of a triangle no longer sum to 180 degrees?" or "what does it mean to be a straight line?". Students will imagine living in hyperbolic or spherical space, discovering for themselves the challenges presented by these unfamiliar geometries. By the end of the week, we will understand tilings and students will create their own hyperbolic and spherical art to take home.

Frequently asked questions

Do I need to be on math team to enjoy SIM Camp?
No! While some of the topics will be similar to some competition math, most of it will be different. The focus will not be in solving problems quickly and alone. Instead, the problems that we do in camp can be open ended, and often have more than one solution. Campers spend a lot of time working in groups to discuss problems and come up with solutions together. Thus, having many different perspectives helps the group solve problems better!

Do I need to have good grades in math class to participate in SIM Camp?
We are looking for students who are enthusiastic about math, and this does not always mean getting good grades. If you like making sense of ideas, looking for patterns, and figuring out why things work, SIM Camp is for you!

Is SIM Camp a good place to get tutoring or get ahead in school over the summer?
SIM Camp is not a tutoring program or summer school. It is an opportunity to play with fun mathematical ideas that are not usually covered in school.

How much does SIM Camp cost?
SIM Camp is $200/student, although scholarships are available. We are able to reimburse students for the cost of daily travel to camp and provide students with lunch each day.

When will we hear about acceptances?
We do not consider applications until after April 15, and we start sending decisions by May 1. We will continue accepting applications until all camps are full.

Questions?
For more information, or if you have other questions about the program, please contact us at math-simcamp@illinois.edu.

Applications

To apply, visit our website https://math.illinois.edu/SIM.

SIM Camp is $200/student with scholarships available. Lunch will be provided. Some travel reimbursement is available.

Priority deadline to apply is April 15, 2019.

ILLINOIS

Mathematics
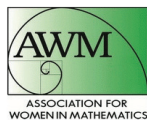
COLLEGE OF LIBERAL ARTS & SCIENCES

Organized by graduate students, the Summer Illinois Math (SIM) Camp is a week-long math day camp for middle and high school students hosted by the Department of Mathematics at the University of Illinois at Urbana-Champaign.

Campers will see the creative, discovery-driven side of mathematics. By showing them some of the ways mathematicians approach problems, SIM Camp hopes to encourage students to continue studying mathematics beyond the high school level.

Sponsors

Mathematical Association of America

Department of Mathematics, the Illinois Geometry Lab, and the Association for Women in Mathematics at the University of Illinois at Urbana-Champaign