



SUMMER ILLINOIS MATH CAMP 2022



APPLICATIONS ARE OPEN!



SIM Camp Epsilon, June 6-10, 2022

- For students starting 8th-10th grade Fall 2022, ages 12-15
- Open to students who will begin algebra in the fall or have taken some algebra already

Representation of Integers as Sum of Squares. One of the famous questions in Number Theory involves searching for integers which can be written as the sum of two squares. Our aim is to precisely determine which numbers have this property. We will start with basic congruence properties, followed by Fermat's Little Theorem, Wilson's Theorem etc. before proving our main result. If time permits, we will discuss the number of such representations for each integer and its connection to lattice points inside a circle.

Maximize Your Winnings: Using Math to Understand Games: Which games have a winning strategy? We will play a variety of games involving chance, strategy, social cooperation, and anticipating the actions of others, while exploring topics in probability and game theory. Through mathematical approaches, we will learn how to develop strategies to play games better.



SIM Camp Delta, June 20-24, 2022

- For students starting 10th-12th grade Fall 2022, ages 15-18
- Open to students who have taken at least one year of algebra

Counting with Symmetries: How many different ways can you paint the faces of a cube red, green, or blue? What if you paint the edges instead of the faces, or the vertices? These simple-sounding questions can be tricky to answer, complicated by the symmetries of the cube. In this course, we'll begin by developing general combinatorial techniques to help us count more cleverly. By the end of the week, we will discuss the mathematics of symmetry and combine it with our newfound counting prowess to solve tricky problems like the ones given above.

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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. Some travel reimbursement is available, and students will be provided with lunch each day.

When will we hear about acceptances?

We do not consider applications until after April 30, and we will start sending decisions soon after. 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.

As of April 1, SIM Camp will be in person this summer.

Priority deadline to apply is April 30, 2022.

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Mathematics

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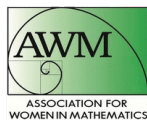
Organized by graduate students, the Summer Illinois Math (SIM) Camp is a week-long math day camp for middle and high school students hosted by the Department of Mathematics at the University of Illinois at Urbana-Champaign.

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



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