



Some numbers can be expressed as an alternating sum of an increasing sequence of distinct powers of 2. To form such a sum, choose a subset of the sequence 1, 2, 4, 8, 16, 32, ... (the powers of 2). List the numbers in that subset in increasing order and combine them with alternating plus and minus signs.

For example:

$1 = -1 + 2$
 $2 = -2 + 4$
 $3 = 1 - 2 + 4$
 $4 = -4 + 8$
 $5 = 1 - 4 + 8$
 $6 = -2 + 8$
etc.

Is every positive integer expressible as such a sum? In how many ways?

Admission

Admission decisions are based on several criteria, including:

- ✱ Responses to essay questions and math problems posed on the application form
- ✱ High school transcripts and teacher recommendation letters

The program has a rolling admissions policy, with a May 1 deadline. However, spaces do fill, so it's best to apply early.

Fees and Financial Assistance

A fee of \$3000 covers the full cost of six weeks of room and board, and all instructional fees. Scholarship funds are available, including two Mehta Fellowships covering the full program cost for Indian students with financial need. More information can be found at <http://u.osu.edu/rossmath/mehta-fellowships/>

The Ross Program operates in partnership with The Ohio State University and the Clay Mathematics Institute. Scholarship support is provided by the Epsilon Fund of the American Mathematical Society.

Applications

Application forms and additional information are available online at:

<http://u.osu.edu/rossmath>

For further information:

Ross Mathematics Program
 Department of Mathematics
 The Ohio State University
 231 West 18th Ave
 Columbus, OH 43210

ross@math.osu.edu
 (614) 292-5101

DEPARTMENT OF MATHEMATICS

ROSS MATHEMATICS PROGRAM

June 14 – July 24, 2015

“Think deeply about simple things.”



THE OHIO STATE UNIVERSITY

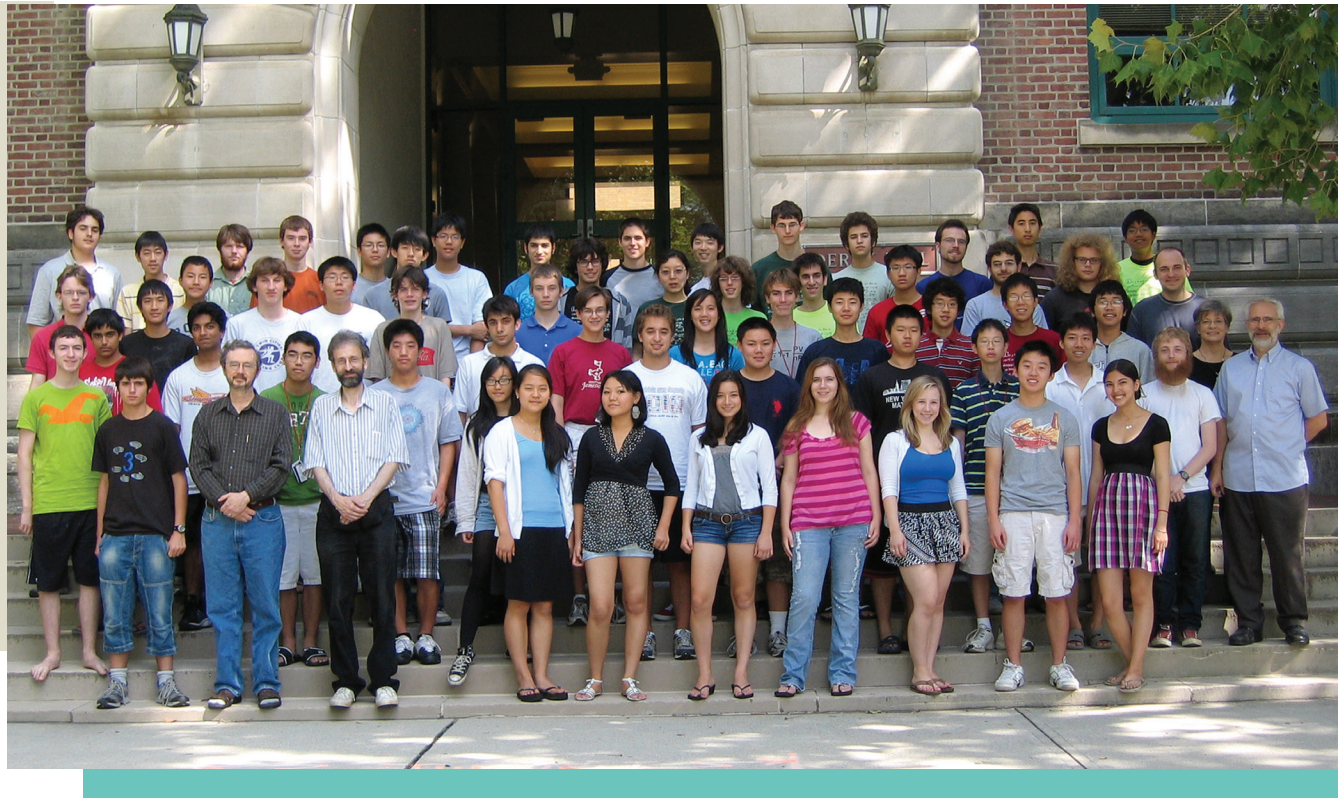
About the Ross Mathematics Program

The Ross Mathematics Program at The Ohio State University is an intensive six week summer course in mathematics for high school students talented in math.

Established in 1957 by renowned mathematician Professor Arnold Ross, this challenging program has had a positive influence on generations of bright young students who have pursued careers in many different fields of mathematics and science.

For six weeks, high-school students will:

- ✱ Explore concepts in number theory, becoming immersed in a world of mathematical discovery
- ✱ Work with mathematical ideas built from concrete observations, and resulting in proofs of general patterns and abstract properties
- ✱ Learn to analyze problems from different perspectives and incorporate this training in later scientific endeavors



About Your Experience

- ✱ You will attend weekday number theory lectures and receive a set of problems that will help you explore ideas discussed in class
- ✱ You will participate in problem seminars led by experienced mathematics faculty members
- ✱ You will explore challenging ideas, look for patterns, make conjectures, test your ideas, and construct convincing proofs, all while developing your creativity and problem-solving skills
- ✱ You will live in dormitories with counselors who are available to discuss the mathematical problems, give advice on techniques of proof, and provide quick feedback on written work

Eligibility

The Ross Mathematics Program is open to ambitious high-school students who want to pursue mathematical knowledge more deeply. The main prerequisite is “mathematical maturity” as measured by responses to the questions and math problems on the application.

After a lot of hard work, you will become comfortable dealing with new mathematical ideas and gain an appreciation for the Ross Program motto:

“Think deeply
about simple
things.”