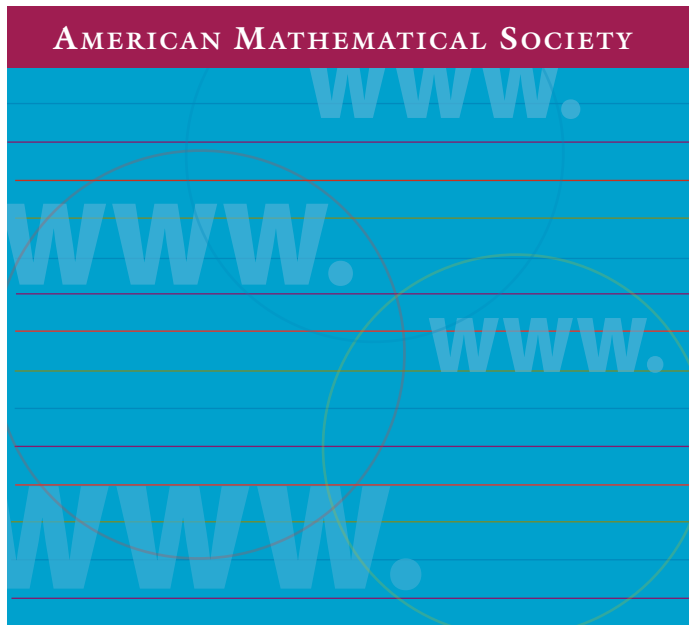


AMERICAN MATHEMATICAL SOCIETY



## A Guide to Online Resources for High School Math Students



## AMS resources for math students

Maybe you already like math. Maybe you already do well in math. Maybe you would like to do well in math! Maybe you are already using math in everyday ways and didn't even know it! The AMS website has resources and links to other websites that will open your mind and bring you new experiences as you study and progress in algebra, geometry, and calculus.

[www.ams.org/programs/students/high-school](http://www.ams.org/programs/students/high-school)

## Summer math programs

One of the best ways to experience math research among fellow students is at a summer math camp or program. Work alone or in teams alongside great mentors to learn math you haven't seen in high school, explore mathematics problems, attend workshops, experience college dormitory living, and make new friends who also love math.



"I had always seen mathematics as something that either you knew or you didn't. Now I know that patience is the key to discovering beautiful things. I also learned that taking on new challenges and welcoming opportunities is the key to new discoveries."

"I've never been around so many people who love math as much as I do, and it's great. Nobody's afraid to be who they are. The people here are just interesting and exhilarating to be around."



"I felt like I was the teacher and they (the counselors) were the students because they made us understand the proof well enough to explain it to them and tell why every step can be made."

"I cannot believe what I see: people studying mathematics until late hours at night, sharing ideas, combining techniques and writing up beautiful mathematics proofs, interesting and delicate pieces of art. Every time a question arises, there is always somebody willing to help us, with a smile on their face."

Learn more about 30 summer programs held in the U.S. and Canada.

[www.ams.org/programs/students/high-school/emp-mathcamps](http://www.ams.org/programs/students/high-school/emp-mathcamps)

## Who Wants to Be a Mathematician

*Who Wants to Be a Mathematician* is a contest of skill and excitement. High school students are selected to play based on a 10-question qualifying test. Contestants compete for cash and prizes by answering multiple-choice precalculus mathematics questions.



"We had a blast!!"



How many real solutions (for  $x$ ) are there to the equation  $e^x - e^{-x} = 5$ ?

- A. None
- B. One
- C. Two
- D. More than two



"Thank you for the fun competition. The cheering section loved it also!"

The AMS has held the contest at over 50 locations from Boston to Honolulu. We may be coming to a town near you!

[www.ams.org/wwtbam/](http://www.ams.org/wwtbam/)

## Arnold Ross Lectures

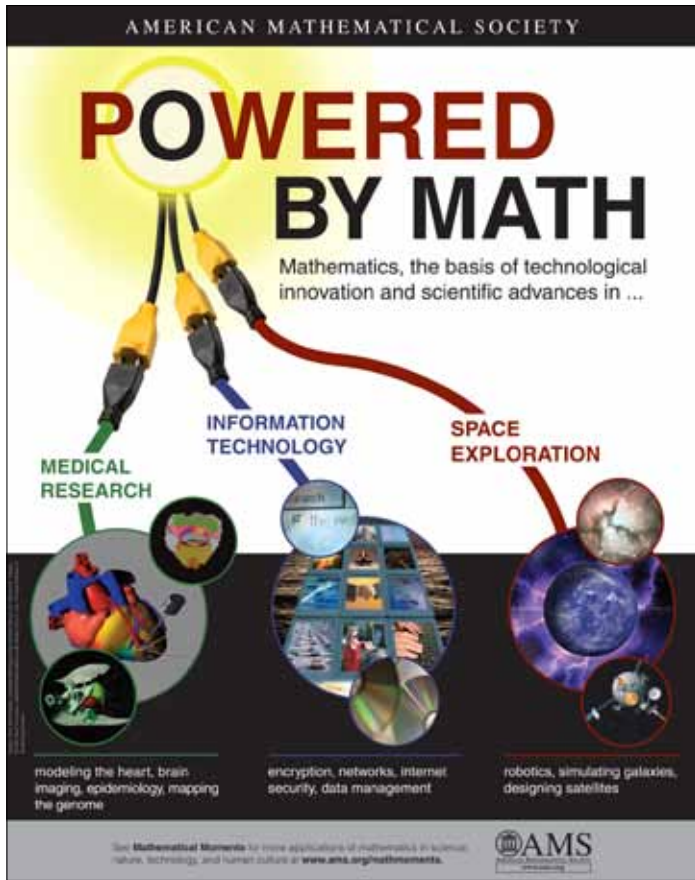
The AMS sponsors a series of annual lectures for interested math students. Read about past lectures and see if the next one will be in your area.

[www.ams.org/programs/students/ross-lectures](http://www.ams.org/programs/students/ross-lectures)



[www.ams.org/programs/students/high-school](http://www.ams.org/programs/students/high-school)

## Career choices



Do you like math but don't know how you can use it in a career? Read about graduates of small colleges and large universities who majored in math, where they work, how they use math on the job, and what advice they give to students.

If you have a background in math and statistics you could be in high demand by employers, because math can be used to model, analyze, and solve problems in areas as diverse as climate, finance, energy, defense, space, and medicine. If you have a B.S. or M.S. degree in mathematics you are in demand and if you have a Ph.D. degree you may find a satisfying career researching some of today's most important questions.

## Headlines & Deadlines for Students



Sign up for the email notification service to get news and alerts about upcoming deadlines for applications and competitions.

[www.ams.org/news-for-students/](http://www.ams.org/news-for-students/)

## Mathematical Imagery

Mathematics has been used in the design of Gothic cathedrals, rose windows, oriental rugs, mosaics and tilings. Geometric forms were fundamental to the cubists and many abstract expressionists, and award-winning sculptors have used topology as the basis for their pieces. Mathematicians and artists today create works that represent infinity, Möbius bands, tessellations, reflections, knots, spirals, and symmetry. The collections on Mathematical Imagery include amazing origami, computer-generated fractals, sculptures, quilts, beads, and beautiful digital images using algorithms and lots of creativity.

Send the e-postcards to your friends!

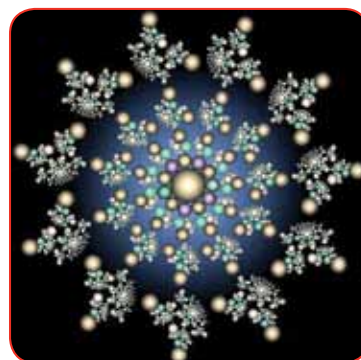
[www.ams.org/mathimagery/](http://www.ams.org/mathimagery/)



"Crocheted Lorenz manifold, black background," by Hinke Osinga, in collaboration with Bernd Krauskopf, Department of Engineering Mathematics, University of Bristol



"Tree Frog, opus 280," by Robert J. Lang. Medium: One uncut square of Origamido paper, composed in 1993, folded in 2005, 5". Image courtesy of Robert J. Lang.



"Circle D," by Anne M. Burns, Long Island University, Brookville, NY

[www.ams.org/programs/students/high-school](http://www.ams.org/programs/students/high-school)

## Mathematical Moments

Discover how math is used in the real world—in sports, climatology, politics, digitized recordings, archaeology, reconstructive surgery, criminology, space exploration, and even solving a mystery about a Beatles song! The poster series explains the role math plays in solving today's problems and in making discoveries about science, nature, technology, and human culture. Some include podcast interviews with researchers who use math to help design cars for Nascar, predict severe storm surges, study sea ice, identify fake photos, and create animation techniques for movies.

There are more than 80 topics and more are added each year.

[www.ams.org/mathmoments/](http://www.ams.org/mathmoments/)



## Math in the Media

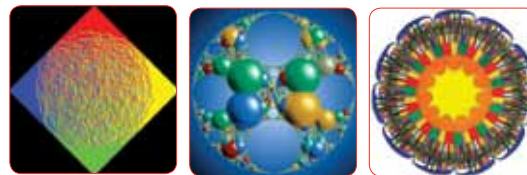
There's more coverage of math and mathematicians in newspapers, magazines, radio and television in the U.S. and around the world than you might think. *Math in the Media*, an online monthly magazine, summarizes articles; radio interviews; TV coverage; and reviews of books, plays, and movies related to math.

Explore the archive to learn about Babylonian mathematical tablets; a mathematical model to try to predict and prevent crime; public key cryptography; how math is used to create realistic computer graphics; how computational origami is used to design a lens that could go into space as well as new ways to fold car airbags; and much more.

[www.ams.org/mathmedia/](http://www.ams.org/mathmedia/)

## Math articles and essays

### What's Happening in the Mathematical Sciences



Images from *What's Happening in the Mathematical Sciences*, Volumes 6 and 7

This book series explains current research and problems in math. Chapters about the Millennium Problems (each of which has a \$1 million award for the solution), the mystery of insect motion, the digits of pi, knot theory, making every pixel count, and others are free online.

Volume 8 in the series covers the role mathematics has played in current events, such as the financial crisis, screening for breast cancer, and the Netflix competition to find a better algorithm for recommending videos to subscribers, and recent research by mathematicians on several important conjectures.

[www.ams.org/happening-series/](http://www.ams.org/happening-series/)

### Feature Column



Keep up to date on the fast-growing and evolving field of math. Columns include "The Price of Anarchy", "How Many Times Do I Have to Shuffle This Deck?", "Multiplication Is Easier When It's Complex", "How Did Escher Do It?", "Mathematics and Sports", "Moving Remy in Harmony: Pixar's Use of Harmonic Functions", and other interesting topics.

[www.ams.org/featurecolumn/](http://www.ams.org/featurecolumn/)

### Notices of the AMS



Each issue of *Notices of the AMS*, a free online journal, includes feature articles and book reviews.

[www.ams.org/notices/](http://www.ams.org/notices/)

## Posters

Request a copy of this *free* poster by sending email to [paoffice@ams.org](mailto:paoffice@ams.org) with "hs-poster" in the subject line. More free posters are on the AMS Posters web page. [www.ams.org/posters/](http://www.ams.org/posters/)



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## Visit these interesting and entertaining websites

**Mathematics Awareness Month.** Read the theme essays and download posters. [www.mathaware.org](http://www.mathaware.org)

**Math Forum's Student Center.** Get help from Ask Dr. Math, try the Problems of the Week, and find ideas for math and science projects. [www.mathforum.org/students/](http://www.mathforum.org/students/)

**Plus magazine.** See each month's articles, career interviews, and puzzles; subscribe to Plus podcasts; and read the Plus Sports page. [www.plus.maths.org](http://www.plus.maths.org)

**MacTutor History of Mathematics Archive.** Look up mathematicians, math topics, timelines, and quotations from various cultures from ancient times to the present. [www-groups.dcs.st-andrews.ac.uk/~history/](http://www-groups.dcs.st-andrews.ac.uk/~history/)

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## Professional societies

Find more information on math, books and journals, careers, meetings, and more.

**American Mathematical Society (AMS):** [www.ams.org](http://www.ams.org)

**American Statistical Association (ASA):** [www.amstat.org](http://www.amstat.org)

**Association for Women in Mathematics (AWM):**  
[www.awm-math.org](http://www.awm-math.org)

**Mathematical Association of America (MAA):** [www.maa.org](http://www.maa.org)

**Society for Advancement of Chicanos and Native Americans in Science (SACNAS):** [www.sacnas.org](http://www.sacnas.org)

**Society for Industrial and Applied Mathematics (SIAM):**  
[www.siam.org](http://www.siam.org)