

A GUIDE TO ONLINE RESOURCES FOR HIGH SCHOOL 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 High School Students and Teachers Website** links to many resources that will open your mind and expand your experiences as you study and progress in algebra and geometry and beyond.

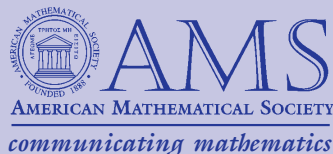
ONLINE MAGAZINES FOR HIGH SCHOOL STUDENTS

These magazines include activities, papers, puzzles, profiles of people who use math in their careers, and more.



SUMMER PROGRAMS

High school students interested in a challenge can find information on summer math programs and camps all around the U.S. See www.ams.org/careers-edu/mathcamps.html.



MATHEMATICS HELP

Do you need help solving a math problem or some ideas for research topics? These websites organize material in various ways, so visit them to see which is most helpful to you.

Ask Dr. Math

Calculus—calculus help and an annual student prize

Discovery School's Webmath—solutions to common math problems

Frank Potter's Science Gems-Mathematics—a guide to websites, arranged by mathematical topic

Math for Morons Like Us—math help, sorted by topic

Math Problem Directory—long-answer Olympiad-type problems

Problem of the Week—list of POW websites with brief reviews

Research Projects for Students

What's Happening in the Mathematical Sciences—articles that explain current mathematical work. Sample chapters can be downloaded.

EVENTS, POSTERS, TOOLS

These special activities bring together high school math students, and the posters and trading cards provide illustrations of mathematicians and mathematical ideas and applications.

Mathematical Moments—a set of posters from the AMS, ready for printing

Mathematician Trading Cards—ready for printing

Math Manipulatives—Zome and Mathartfun

Special events, such as—Arnold Ross Lectures for talented high school math students, Mathematics Field Days for New England High School Students (at Boston University each fall), and Sonya Kovalevsky High School Mathematics Days (sponsored by the Association for Women in Mathematics).

See www.ams.org/careers-edu/highschool.html

MATH COMPETITIONS AND CONTESTS

THESE WEBSITES ANNOUNCE COMPETITION AND CONTEST TOPICS, FORMATS, ENTRANCE GUIDELINES, AND RESULTS.

American Mathematics Competitions (AMC)—USA Mathematical Olympiad (USAMO)

American Invitational Mathematics Exam (AIME)

Colorado Mathematical Olympiad—the largest essay-type mathematical competition in the U.S.

The High School Mathematical Contest in Modeling—uses mathematics to solve real-world problems

Intel International Science and Engineering Fair

International Mathematics Olympiads—Washington, DC, July 2001, and Glasgow, Scotland, July 2002

Johns Hopkins University High School Annual Mathematics Tournament

Mandelbrot Competition—a truly educational experience for high school students

Mathcounts—for middle school students

Pomona College / University of Wisconsin Mathematical Talent Search

USA Mathematical Talent Search—a mail-in test for U.S. students held several times per year, sponsored by the National Security Agency and COMAP

CAREER CHOICES

College graduates with a bachelor's degree in mathematics can qualify for a broad range of positions in business, industry, government, and teaching. Companies in the computer and communications industries employ many mathematicians, as do oil companies, banks, insurance companies, and consulting firms. Almost every bureau and branch of the federal government

employs mathematicians in some capacity—in accounting, statistics, computer programming, energy, defense, space, among other areas. Those with a B.S. or M.S. degree in mathematics are in demand as K–12 math teachers, and those with a Ph.D. degree may find a career in research and teaching. Mathematical ideas and models are used in physics, chemistry,


astronomy, and increasingly in the biological sciences. Even the social sciences—particularly economics and psychology—use mathematics. Actuarial science, computer science, and statistics all have math as their foundation. All these careers begin with an education in mathematics and a curiosity about the use of mathematics to solve problems.

Actuary	Credit/loan officer	IRS investigator	Securities broker
Air traffic controller	Cryptoanalyst	Market research analyst	Software analyst
Appraiser	Data analyst	Mathematician	Statistician
Animator	Engineering analyst	Mortgage broker	Stockbroker
Bank examiner	Epidemiological analyst	Numerical analyst	Systems analyst
Banker	Estimator	Operations research analyst	Teacher
Benefits administrator	External auditor	Payroll manager	Technical writer
Budget analyst	Financial aid director	Planning and budgeting specialist	Textbook writer
Buyer	Financial manager	Pollster	Traffic control analyst
Claims adjuster	Financial planner	Population ecology analyst	Transportation analyst
Climate analyst	Foreign-exchange trader	Production manager	Treasurer
College professor	Forensic analyst	Public utilities analyst	Trust analyst
Commodities trader	Information scientist	Purchasing agent/buyer	Underwriter
Computer programmer	Insurance agent/broker	Quality control analyst	Urban designer
Contract administrator	Inventory control specialist	Research scientist	Weights and measures specialist
Controller	Investment analyst	Resource management analyst	
Cost estimator	Investment researcher		

See www.ams.org/careers-edu/highschool.html


DID YOU KNOW? MATH BEHIND THE SCENES AND IN THE FOREFRONT


Mathematics is used in careers in many fields. *Mathematical Moments*, a series of illustrated, informational posters, describes the integral role mathematics plays in:



Securing Internet Communication

No one could shop, pay bills, or conduct business securely on the Internet without the mathematics of encryption. Although based on algebraic facts proved centuries ago, today's sophisticated encryption techniques were formulated within the past twenty-five years.





The *Mathematical Moments* program promotes appreciation and understanding of the role mathematics plays in science, nature, technology, and human culture.

Describing the Oceans

Designing Aircraft

Deciphering DNA

Storing Fingerprints

Investing in Markets

Creating Crystals

Seeing the World through Fractals

Experimenting with the Heart

Securing Internet Communication

Making Movies Come Alive

Listening to Music

Routing Traffic through the Internet

Tracking Products

Forecasting Weather

Manufacturing Better Lenses

Mapping the Brain

www.ams.org/ams/mathmoments.html

CONTACT THESE ORGANIZATIONS FOR MORE INFORMATION

American Mathematical Society (AMS): P.O. Box 6248, Providence, RI 02940-6248; tel 800-321-4267, ext. 4107, or 401-455-4107; email prof-serv@ams.org; website www.ams.org

American Statistical Association (ASA): 1429 Duke St., Alexandria, VA 22314-3415; tel 703-684-1221 (toll-free 888-231-3473); email asainfo@amstat.org; website www.amstat.org

Association for Women in Mathematics (AWM): 4114 Computer & Space Sciences Building, University of Maryland, College Park, MD 20742-2461; tel 301-405-7892; email awm@math.umd.edu; website www.awm-math.org

Institute for Operations Research and the Management Sciences (INFORMS): 901 Elkridge Landing Road, Suite 400, Linthicum, MD 21090-2909; tel 800-4IN-FORMS; email informs@informs.org; website www.informs.org

Mathematical Association of America (MAA): P.O. Box 91112, Washington, DC 20090-1112; tel 800-331-1622 or 301-617-7800; email maahq@maa.org; website www.maa.org

National Association of Mathematicians (NAM): Box 959, Elizabeth City State University, Elizabeth City, NC 27909; tel 919-335-3326; email nam@ias.ga.unc.edu; websites jewel.morgan.edu/~nam or www.caam.rice.edu/~nated/orgs/nam/index.html

National Council of Teachers of Mathematics (NCTM): 1906 Association Drive, Reston, VA 20191-9988; tel 703-476-2970; email nctm@nctm.org; website www.nctm.org

Society for Advancement of Chicanos and Native Americans in Science (SACNAS): P.O. Box 8526, Santa Cruz, CA 95061-8526; tel 831-459-0170; email info@sacnas.org; website www.sacnas.org

Society for Industrial and Applied Mathematics (SIAM): 3600 University City Science Center, Philadelphia, PA 19104-2688; tel 215-382-9800; email siam@siam.org; website www.siam.org

Society of Actuaries (SOA): 475 North Martingale Road, Suite 800, Schaumburg, IL 60173-2226; tel 847-706-3500; website www.soa.org

The website URL addresses are accurate at the time of this writing. If you are unable to locate any subsidiary Web address, try the organization's main website for more information.

This brochure is available as a downloadable pdf file at www.ams.org/careers-edu/hsguide.pdf.