



MU
ALPHA

THE
STRA

NEW SPONSOR MANUAL

COMPOSED BY:

**THE JAMES B. DUDLEY CHAPTER OF
MU ALPHA THETA**

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WELCOME!

On behalf of all of the sponsors of Mu Alpha Theta across the world we would like to welcome you and thank you for taking up the mantle of leadership. Your leadership in Mu Alpha Theta continues to ensure that students can have enriching experiences in mathematics. In the current days of education, when there is a push for students to be a part of STEM fields, your push definitely helps! We hope this manual helps you with new ideas and programs your chapter can participate in!

NEW SPONSOR TIPS

- Always communicate with your chapter (Try out www.remind101.com) which allows you to “mass text” your chapter from your computer
- Always be enthusiastic about activities and keep a high amount of energy. It will make the difference between just an ordinary honor society and an active honor society
- Get parents involved as well (you can sign them up for remind101.com too)
- Communicate with sponsors in your area and plan activities together
- Get in contact with your local colleges and universities and see what their mathematics departments are doing
- Keep a historical record of EVERYTHING that way you don't have to plan from scratch each year (Recommend digital and hard copies)
- Email Kay Weiss often and other national officers of Mu Alpha Theta about your chapters current happenings
- Plan events way in advance and look for back up plans just in case.
- TAKE responsibility for your chapter and MAKE them engaged in mathematics!

10 STEP GUIDE TO EFFECTIVE MATH PROGRAMMING

1. Will the programs said goals line up with mathematics?
2. Will the program be cost effective?
3. Will the program have great attendance?
4. Will the participants of the program find a new way to enjoy mathematics?
5. How creative is the program and applicable to real life?
6. How labor intensive is the program as well as materials heavy?
7. Will the general population understand the mathematics you are trying to convey (who is your targeted audience)?
8. How will the program be supported?
9. Will this be a program that other chapters or organizations can recreate or Mu Alpha Theta specific
10. Will your students take ownership of the program?



10 STEP GUIDE TO EFFECTIVE MATH PROGRAMMING

The aforementioned program guides are very important to making an effective chapter. It's already hard enough to get students to participate in mathematics, however if you can create great programs, then the students will always come flocking 😊! All 10 answers to those questions SHOULD be YES! If not then rethink your program a little bit.

PROGRAM LISTING FOR MU ALPHA THETA

- **“Winter Wonderland Explorations”**
- Goal: Use Christmas themes to educate children and community in mathematics
- Basic Idea: There are lots of mathematics Christmas games and puzzles out there (check out: <http://www.mathwire.com/seasonal/winter05.html>). You would set up 6 – 7 stations in rotation (this is a great weekend activity) and have members of Mu Alpha Theta teach a station. Some of the stations from the past included
 - Gingerbread Geometry – Construction of Gingerbread houses (using rulers to measure dimensions and calculate area and volume)
 - Snowflake Fractals – Teach about fractal patterns (Koch Snowflake) and then have students cut and design snowflakes
 - Frosty Melting – Using cubes of ice and a blow dryer have students melt ice cubes and record in a table after various time intervals the number of cubes and plot a graph as well as color a frosty
 - The Twelve Days of Christmas – Have students look at the items from the 12 days of Christmas Song (there is a website that has the “prices”) and calculate the costs of purchasing gifts if given a certain amount of money,
 - Silent, Night – Without talking using only marshmallows and spaghetti a team must construct a structure on an index card (described by the reader who then tells the interpreter and the interpreter must tell the builder using only hand signals.

This is a material intensive activity but it is a lot of fun (check out DonarsChoose.Org for possible donations)

PROGRAM LISTING FOR MU ALPHA THETA

- **Winter Walk for AIDS**

- Goal: Raise money for AIDS awareness and research
- Basic Idea: This is a program that was partnered with Triad Health Project in Greensboro, NC (contact your local health clinics to see about activities they do for awareness).
- Students create posters and signs with HIV/AIDS statistics and data as well as Mu Alpha Theta signs. Creatively you can take the "A" in Mu Alpha Theta and make it into the AIDS ribbon. It was a neat way to display connectedness to the program.
- For fundraising have students get envelopes and go into their communities or sit outside the lunch room during different lunches and have students donate.
- For the walk (if organized by you) have all members wearing the same color. Red is usually nice or black. You can also make signs for victims of AIDS and have a candle light vigil. It's a very moving program and the students really get to see statistically the seriousness of the AIDS epidemic.

PROGRAM LISTING FOR MU ALPHA THETA

DOWNLOADING ANSWER.

ESTIMATED TIME REMAINING 04:14

- **“Shadowing Day”**

- Goal: Allow students to shadow careers in mathematics and the STEM Field
- Basic Idea: There are a lot of programs and companies out there that will allow students come and shadow for a day. For example, my chapter at James B. Dudley took a day to go to Lincoln Financial Group to learn about Actuarial Science. It was COMPLETELY sponsored by Lincoln Financial Group as an initiative to assist with STEM (Time Warner and Exxon have great initiatives too). Students will have the opportunity to learn about careers and even do hands on activities. It is a great field trip. I had my students dress professionally and bring a resume to look into possible internships. We are now a partner with Lincoln Financial Group through the International Association of Black Actuaries. Check out NASA, Thomas Jefferson Labs, Sandia National Labs or an companies in the area.

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Theta

PROGRAM LISTING FOR MU ALPHA THETA

- **Math Fair (Science Fair Participation Long-Term)**
- Goal: Have a challenge within the chapter to have students present scientifically solved mathematics problems that can be used in the Science Fair competition.
- Basic Idea: There are numerous real world application problems in texts books that can be turned into projects. One such, is the use of exponentials to model population growth. Within the chapter have several if not all students look at a problem and present their findings using a trifold board
 - It is essential that they use the scientific method
 - Have students with excellent presentations enter the International Science and Engineering Fair competition by participating at local fairs (check out this site for details: <http://www.societyforscience.org/isef/>)
 - This project will help students get use to presenting mathematics talks and papers as well as get into the habit of scientific and technical writing
 - There are lots of scholarships available for winning science fairs and math fairs
 - SUGGESTED TIME: Give students at least 3 – 5 months to get project done (start in beginning of school year and have done by winter break to present in Science fairs)

PROGRAM LISTING FOR MU ALPHA THETA

- **Math Awareness Day**

- Goal: Following the guidelines of the Mathematical Association of America and the American Mathematical Association create a day in April during Math Awareness month designated to mathematics using the given “theme”
- Basic Idea: Center activities around the Math Awareness month theme found on www.ams.org or www.maa.org. They have prepared kits with activities at low costs and there are even discounts (just call and inquire).

- **“Pi” Day**

- Goal: Fundraise and pay homage to the great Pi!!!!
- Basic Idea: asking your mathematics department or administrators take a picture (silly picture of each) and put on a jar and have students put in a dollar for the top three persons they want to see pied at an assembly (plan in advance). The donations can go toward the chapter materials are very simple just aluminum pans, and whip cream as well as the jars to collect money. It’s an exciting fundraiser and quite humorous. Students in Mu Alpha Theta can do lectures and talks to different groups on the history of Pi and it’s importance to real life

Mathematics, Statistics, and the Data Deluge
MATHEMATICS AWARENESS MONTH

Sponsored by the Joint Policy Board for Mathematics—American Mathematical Society, American Statistical Association, Mathematical Association of America, Society for Industrial and Applied Mathematics

PROGRAM LISTING FOR MU ALPHA THETA

- **Flapjack Fundraiser**

- Goal: Raise money by hosting a flapjack breakfast.
- Basic Idea: Contact your local Applebees and set up a day to host a flapjack breakfast:
 - This requires great logistical organization. Students will be responsible for ticket sales.
 - Suggestion: Distribute envelopes with even amounts of tickets for students (10 – 20) and keep track of who has what money and what tickets (a system of checks and balances)
 - Plan this event at least two – three months before the event o maximize ticket sales.
 - Donations are acceptable.
 - Meet with Applebees representative to ensure all logistics are planed out.

- **Skittles In Jar Guess**

- Goal: Fundraiser for chapter
- Basic Idea: Have participants guess how many skittles are in a jar using volume and surface area. Have students assist with calculations. The cost for participation is \$0.50, which will draw more participants than making the cost \$1.00.

PROGRAM LISTING FOR MU ALPHA THETA

- **Krispy Kreme Taurus Knots**
- Goal: Learn about some basic topology using Krispy Kreme doughnuts.
- Purchase a set of Krispy Kreme donuts and allow students to read about Taurus knots and learn about geometry manipulation. Using playdough or clay have students construct Taurus knots and learning a little bit about “ripping, cutting and tearing” which come up in differential geometry and topology. (Do not make this activity too rigorous, the idea is to introduce them to proof based ideas and rigorous mathematics)

- **Adopt – A – Street**
- Goal: Contact city department and adopt a street to clean bi monthly or monthly.

- **Tutorial Sessions**
- Goal: Allow Mu Alpha Theta students to tutor students in their schools and outside their schools in mathematics for service hours.

OTHER GREAT PROGRAMS

• HIGH SCHOOL MATH ACTIVITIES

• I've gathered together a few of what I think are interesting math activities that I created and used over the years. Feel free to use, as is or modified to fit your needs, any of the worksheets. If you have any comments, questions or suggestions, you can contact me at bkiggins@kw.igs.net.

- [Finite differences](#)
- [Powers of Three](#)
- [Graphing Project](#)
- [Pop Can Assignment](#)
- [Measuring the Acceleration due to Gravity](#)
- [Using Trig to Calculate Pi](#)
- [Tangent Experiment](#)
- [Sloping Letters](#)
- [Lotteries and Other Probability Stuff](#)
- [Voronoi Diagrams](#)
- [Pi in a Can](#)
- [Benford's Law](#)
- [The Mandelbrot Set and Complex Numbers](#)
- [Stylometry](#)
- [Drill Sheets](#)
- [Website: \(http://www.kw.igs.net/%7Ebkgiggins/\)](http://www.kw.igs.net/%7Ebkgiggins/)

Be rational

Get real.

SUMMER CAMPS!!!

- **A* Summer Math Camp**

Location: California State University-Northridge (CSUN), *Northridge, CA*

Web site: <http://a-star.accordeducation.org/summercamp>

ALL GIRLS/ALL MATH

Location: University of Nebraska-Lincoln, *Lincoln, NE*

Web site: <http://www.math.unl.edu/programs/agam>

AwesomeMath Summer Program

Location: University of Texas at Dallas, *Dallas, TX* and University of California at Santa Cruz, *Santa Cruz, CA*

Web site: <http://www.awesomemath.org>

Camp Euclid

Location: Online

Web site: <http://euclidlab.org/programs/camp-euclid>

Canada/USA Mathcamp

Location: Mathematics Foundation of America, *Location varies*

Web site: <http://www.mathcamp.org/>

CCNY Scholars Program

Location: City College of the City University of New York, *New York, NY*

Web site: <https://summerscholarsacademy.theschoolsystem.net/ssa.html>

COSMOS: California State Summer School for Mathematics and Science

Location: University of California 4 campus locations - *UC Davis, UC Irvine, UC Santa Cruz, UC San Diego*

Web site: <http://www.ucop.edu/cosmos/>

GEMS Camp (Girls Experiencing Mathematics in the Summer)

Location: University of St. Thomas, *St. Paul, MN*

Web site: <http://www.stthomas.edu/mathematics/old%20channels/default.html>

Governor's Institutes of Vermont: Mathematical Sciences

Location: University of Vermont, *Burlington, VT*

Web site: <http://www.giv.org/>

SUMMER CAMPS!!!

- **Hampshire College Summer Studies in Mathematics (HCSSiM)**

Location: Hampshire College, *Amherst, MA*

Web site: <http://www.hcssim.org> and <http://www.yp17.org>

International Mathematical Summer School for Students (for students in the last 2 years of high school only)

Location: Ecole Normale Supérieure of Lyon (ENSL), *Lyon, France*

Web site: <http://www.issmys.eu/>

Institute of Technology Center for Educational Programs

Location: University of Minnesota, *Minneapolis, MN*

Web site: <http://www.itcep.umn.edu>

Lamar Achievement in Mathematics Program (LAMP)

Location: Lamar University, *Beaumont, TX*

Web site: <http://www.math.lamar.edu/activities/LAMP/LAMP.aspx>

LSU MathCircle Summer Enrichment Program

Location: Louisiana State University, *Baton Rouge, LA*

Web site: <https://www.math.lsu.edu/dept/mathcircle>

Mathlinks Summer Math Camp

Location: San Diego State University, *San Diego, CA*

Web site: <http://mathlinks.us>

MathPath (Ages 11 - 14)

Location: Mathpath, *Location varies*

Web site: <http://www.mathpath.org>

Math and Related Sciences (MARS) Camp

Location: University of Maryland, Eastern Shore, *Princess Anne, MD*

Web site: http://www.nsa.gov/academia/early_opportunities/math_edu_partnership/mars/index.shtml

Math Summer Programs and Math Camps on College Campuses in New York State

Location: Various locations, *New York State*

Web site: <http://www.summeroncampus.com/main/ActivityProgramsList.asp?CategoryID=6>

SUMMER CAMPS!!!

- **Math Zoom Summer Camp**

Location: University of California, *Los Angeles, CA*

Website: <http://www.mathzoom.org>

The Mathematics Triple (UMass-Amherst Summer College)

Location: University of Massachusetts-Amherst, *Amherst, MA*

Website: <http://www.umass.edu/summer/mathematics-triple>

Michigan Math and Science Scholars

Location: University of Michigan, *Ann Arbor, MI*

Web site: <http://www.math.lsa.umich.edu/mmss>

New York Math Circle Summer Program

Location: NYU Courant Institute, *New York, NY*

Web site: <http://www.nymathcircle.org/summer>

Program in Mathematics for Young Scientists (PROMYS)

Location: Boston University, *Boston, MA*

Web site: <http://www.promys.org>

Puerto Rico Opportunities for Talented Students in Mathematics (PROTaSM)

Location: University of Puerto Rico, *Mayaguez, Mayaguez, PR*

Web site: <http://www.ompr.pr/>

Quantum Cryptography School for Young Students

Location: University of Waterloo, *Waterloo, ON, Canada*

Web site: <http://iqc.uwaterloo.ca/conferences/qcsys2012>

Research Science Institute (RSI)

Location: Massachusetts Institute of Technology, *Cambridge, MA*

Web site: <http://www.cee.org>

Ross Mathematics Program

Location: Ohio State University, *Columbus, OH*

Web site: <http://www.math.ohio-state.edu/ross/>