FALL 2012

MU ALPHA THETA NEWSLETTER

NEWS FROM THE PRESIDENT

The 2012-2013 school year has begun and, on behalf of Mu Alpha Theta, I would like to welcome you back to the classroom and another year of mathematics. If you are a new teacher, check out the *Teacher Resources* section at www.mualphatheta.org for meeting and activity ideas. If you are a veteran teacher, consider sending descriptions of activities that worked for your chapter to Kay Weiss at matheta@ou.edu. Also, don't forget to contact your middle school associates and tell them about Chi Alpha Mu, our middle and junior high math club. Information is available at www.chialphamu.org. You will eventually inherit their students so generating interest and involvement with a math club before high school will be a rewarding endeavor for you.

Summers are great for relaxing and getting away from the routines of school. I hope your summer was everything you were longing for in that tantalizing month of May. I'm really sorry if you missed the 2012 National Convention in Boston. Dr. Thom Morris from Berkeley Prep and Sue Doker from Lincoln High hosted an outstanding week of unique competitions and stimulating speakers. The convention was held in the Historic Boston Park Plaza Hotel with meals served across the street in a castle with a moat. Between events there was time to explore Boston and many groups visited MIT and Harvard, walked the Freedom Trail, or toured Fenway Park. Although there were many individual winners, the overall sweepstakes winner was Buchholz High School for the fifth straight year. Go Buchholz! Two awards announced at the National Convention were the Kalin and Huneke. This year Dae (Daniel) Kang from Rickards High was awarded the Kalin Award for outstanding service to Mu Alpha Theta. The Huneke Award for most dedicated sponsor went to Susan Hiller, retired from Vero Beach High School.

Start planning now for the 2012-2013 National Convention on July 21-26 in sunny San Diego at the Town and Country Resort. Chapters who haven't attended a convention before and would like some help with finances should apply for a Convention Grant. Applications are available on our website.

There are many scholarships, awards, and grants available to Mu Alpha Theta members. Plan now to apply. If you don't apply, you can't be considered, so make a resolution now to get those applications in to the

(continued on next page)

National Office. All applications and information are at www.mualphatheta.org.

Please don't forget Study Buddy. Your members can receive service credit for tutoring and will be helping students from economically disadvantaged schools. Go to http://www.studybuddyhelp.org/ to sign up.

Finally, if you have questions or suggestions contact your Regional Governor or Kay Weiss, Executive Director of Mu Alpha Theta.

I hope you have a great year and that I will get to meet you next July in San Diego.

Elizabeth Carol Bolyard

Mu Alpha Theta President

new! MATHEMATICAL MINUTES VIDEO CONTEST

Mu Alpha Theta is continuing its Math Presentation Contest under a new name, the Mathematical Minutes Video Contest! The Mathematical Minutes Video Contest will be run by Miami Springs Senior High, under the direction of Mu Alpha Theta Region 4 Governor Sam Koski. The contest asks students to create educational and entertaining math videos. To view guidelines and a short video presentation, go to www.mualphatheta.org > Contests.

Eight videos will be chosen for the final round of judging. Up to $2,250 will be available to be split amongst the entries by quality. Chapters will be involved in the voting for ranking the top 8 videos. Final award amounts will be determined by a vote of the chapters and input from the Governing Council. All videos will need to be submitted by January 31, 2013 by midnight E.S.T.

JULY 21 - 26, 2013

AT THE TOWN AND COUNTRY RESORT

The 43rd Annual Mu Alpha Theta National Convention will be held from July 21-26, 2013 in San Diego, CA at the Town and Country Resort. Outings will include a trip to the San Diego Zoo and an evening cruise and dance aboard a yacht.

Before April 1:
$550 Early Registration

After April 1:
$590 Regular Registration

All registration must be postmarked by May 15th.
Visit www.mualphatheta.org for more information!

NATIONAL OFFICE NEWS *from Kay Weiss*

At the National Office, we are all ready for the new school year. We hope this will be as good a year as we had last year. By last June, Mu Alpha Theta had enrolled over 93,000 student members in more than 1900 chapters. Outside of the 50 United States, we now have active members in Belgium, China, Colombia, Great Britain, Japan, Malaysia, Mexico, Poland, Puerto Rico, Singapore, Spain, South Korea, the Georgian Republic, and the United Arab Emirates. We are very excited to be serving such wonderful math students throughout the world.

The National Office is open from 10:00 AM to 6:00 PM, Monday - Friday, throughout the year. We are closed on all major holidays, including Labor Day (Sept 3), Thanksgiving (Nov 23-25), and winter break (Dec 23 - Jan 2). Please make sure to include extra time for orders to arrive if there is a postal holiday around the time of your order.

Speaking of mail, orders weighing 13 ounces or less are mailed by First Class mail. **The US Post Office can take up to a week to deliver these items. Please, plan ahead.** If your order is under 23 certificates, it will go out First Class. A small amount of merchandise might also go out First Class. Sometimes, we get an order where the certificates go out in a First Class envelope and the merchandise in a First Class box on the same day. These inevitably get to you on different days. (We have never figured this out, but it seems to happen all the time.) Orders over 13 ounces will either be shipped Priority US Mail or FedEx Ground. These arrive in three to four days, usually. You may still have us ship by the $15 2 Day FedEx or $25 Overnight. While we ship most items free of charge to you, we do ask that your school order no more than three times in the same semester. This helps us to keep costs down. If a school orders more often, we will assess a $15 fee. This helps to pay the extra shipping costs we incur.

Please make sure you and your students read through the fall newsletter completely. We have much to offer with free math contests, free calculators, free math software, and offers for grants and scholarships. This past year, Mu Alpha Theta and the Educational Foundation provided over $100,000 in scholarships, almost $25,000 in Summer Grants, $24,000 in Convention Grants, about $8,000 in Chapter Grants, and more than $14,000 in Awards and Prizes.

We want to help support your chapter activities and make the Mu Alpha Theta experience really special for your members. Let us help! **Think of applying for a Chapter Grant.** We still have money available.

If you have comments or suggestions for us or the Governing Council, please contact us. We are always looking to improve and do more!

At the end of this newsletter, you will find two Articles of our National Constitution that the Governing Council worked on this summer. Updated wording was written to help clarify these sections.

The first Article tries to clarify the definition of “high school” and what requirements are needed for a school to start a Mu Alpha Theta chapter.

The second Article tries to clarify our membership categories. There has been much confusion about what an “Associate Member” really is, since these students are not really members of Mu Alpha Theta. By changing our category to Members or Associates, we hope to avoid this confusion. Chapters have the right to choose membership criteria above the minimum we require at the National level. **However, in my mind, the sooner a student is a “real” member of Mu Alpha Theta, the more services we can provide them.** If they don’t become a member until the spring of their senior year, they can’t even apply for a scholarship and won’t be eligible to get a Summer Grant. The new wording also asks you to move Associates up to Member status after no more than one year. While it might take you a year to determine who is really committed to participate in Mu Alpha Theta, we feel chapters can usually figure this out by the end of one year.

Please read over the new wording and submit a “Yes” or “No” vote to me by emailing matheta@ou.edu. Include the name of your school and your chapter ID number. One vote per chapter.

NATIONAL CONVENTION GRANTS

Mu Alpha Theta will award a limited number of $2,800 Convention Grants to the 2013 San Diego Convention. Each grant will cover free registration for a sponsor and three students, who must not have graduated before the convention. Remaining funds may be used for additional student registration costs or to reimburse travel expenses. To be eligible for a grant, a Mu Alpha Theta chapter cannot have attended a National Convention previously. The intent of the grant is to allow the teacher and students to experience a National Convention. Only schools who have a math sponsor and three eligible students should fill out the application.

Students from Tampa Bay Tech, a grant recipient, at the 2012 Boston National Covention

The application deadline is April 1st. Schools selected will be contacted before the end of April by phone and email. The only responsibility of the winners is to fill out a survey after the National Convention regarding their experiences. Applying schools should be ready to submit convention registration information should they be selected. Winners of the grants are encouraged to bring more than three students. Additional attendees will be granted the early bird registration rate, as long as full payment for them is received by the May 15th deadline. Go to the grants section of www.mualphatheta.org to download an application.

Free Texas Instrument Calculators!

Mu Alpha Theta has a very limited number of TI-84 Plus and TI-89 Titanium graphing calculators to give away this year. We will provide up to three calculators to a school to give away as prizes at competitions it is running, as prizes to their own outstanding students as a reward, or to auction off to raise money for their club (1 calculator per 12 members).

Please note that preference will be given to schools that have never received free calculators in the past. ***Due to our limited supply, no school that has received calculators in the last three years is eligibile.*** If interested, email the National Office at matheta@ou.edu with your request today!

THANK YOU TO THOSE WHO HAVE SERVED:

Retired Sponsors:

Alief Hastings HS South, Houston, TX: Richard Hilton
American Heritage HS, Plantation, FL: Leigh Chin
Atlantic Technical Magnet HS, Coconut Creek, FL: Tess Rebello
Bainbridge Island HS, Bain. Island, WA: Joy Namtvedt Best, 12 yrs
Calhoun HS, Port Lavaca, TX: Nancy Muil
Camden-Fairview HS, Camden, AR: Gordan Maroney, 30 yrs
Coral Gables Senior HS, Coral Gables, FL: Yanitza Herrera
D. H. Conley HS, Greenville, NC: Mara Moye
Earl Warren HS, San Antonio, TX: Janie Love
Florence HS, Florence, MS: Lisa Byrd
George Jenkins HS, Lakeland, FL: Cindy Dunne
Hicksville HS, Hicksville, NY: Karen Warner, 5 yrs
Houston HS, Germantown, TN: Priscilla Hayes
L. C. Bird HS, Chesterfield, VA: Denise Blankenbecler
Lincoln HS, Tallahassee, FL: Sue Doker, 30 yrs
Norfork HS, Norfork, AR: Ernest Higgins, 12 yrs
Oakton HS, Vienna, VA: Sally Curle
Oakton HS, Vienna, VA: Sally Curle, 8 yrs
Osbourn HS, Manassas, VA: Virginia Henry
Parkview Baptist HS, Baton Rouge, LA: Holly LeBlanc
Robinson Secondary School, Fairfax, VA: Susan White
SBEC, Southhaven, MS: Janie James, 8 yrs
Starkville HS, Starkville, MS: Lauren Host
St. Cloud HS, St. Cloud, FL: Patricia Hilla-Shoup
Talented & Gifted HS, Dallas, TX: Thundiyil Abraham, 20 yrs
Wachusett Regional HS, Holden, MA: Lois Tolis
Walker Valley HS, Cleveland, TN: Luajean Bryan, 36 yrs
Washington School, Greenville, MS: Sheryl Curtis
Westlake HS, Westlake Village, CA: Carmella Ettaro, 5 yrs

ARML POWER CONTEST

"Now in its eighteenth year, the ARML Power Contest provides a group problem solving situation similar to the power question found at the annual ARML Competition. Each year the contest consists of two problem sets, one in the fall and the other in late winter. The mathematics level of the contest problems has been geared so that students in an honors class, in a math club, or on a math team can have a unique problem solving and mathematical writing experience. There is no limit to the size of the team, but the time for solving the problem set is limited to 45 minutes.

The 2012-2013 ARML Power Contest will be run the weeks of Nov 3-18 and Jan 26-Feb 10. Coaches will receive the contest materials during the week prior to the above dates and may schedule the contest anytime during the designated two weeks. After completing the contest, the student solutions are then mailed back and are graded using a forty-point rubric. Trophies will be awarded to the top ten scoring teams at next year's ARML Competition." **For more information, go to www.arml.com. The cost per team is $50. The deadline for registration is Oct 22, 2012**.

SIGN UP FOR THE STUDY BUDDY TUTORING PROGRAM THIS YEAR!

Thank you to all Mu Alpha Theta chapters who participated in Study Buddy last year! Your members brought free online math homework help to over 11,000 students during the 2011-2012 school year! This fall Study Buddy tutoring will commence mid-September. Please visit our website for the exact launch date of tutoring. Tutors who were enrolled in the program last year will receive an email inviting them to re-activate their account for the new school year. We are excited to offer tutoring this year in **Chemistry** and **Physics** in addition to all middle and high school math courses. Tutors who reactive their accounts will be given the option to sign up to tutor in the sciences as well.

Study Buddy is a cutting edge web based online peer-to-peer tutoring program designed to address low math and science scores of underperforming middle and high school students. This homework assistance program utilizes the latest interactive, collaborative technology to bring students from different locations across the country together for online math, physics and chemistry homework help. Study Buddy relies solely on volunteers like you to help struggling students.

Convenience – Volunteering from your computer after school or at home, in the evening and/or on the weekend, the ability to schedule yourself in half hour segments and having the flexibility to choose when you wish to help makes Study Buddy an easy volunteer option.

Students – As a Mu Alpha Theta high school member, you will be paired with students who are struggling and may not otherwise have access to a tutor due to economic and/or geographic reasons. Student tutors commit to tutoring one hour per month. Your participation will be tracked by software and will serve as community service credit hours. Your unique tutor log book tracks your community service hours and saves your tutoring sessions automatically. You have the ability to view an online summary of your volunteer community service hours at any time to track your activity in the program.

Teachers - We encourage you to enroll your Mu Alpha Theta members in Study Buddy and can do so with minimal effort! Detailed reports of your tutors' activity will be emailed to you once a month and enable you to monitor your students' participation in the program and award community service hours at your discretion.

2013 Mu Alpha Theta Convention Grant – Study Buddy is proud to announce the third annual Mu Alpha Theta Convention Grant. NSTEP will provide up to $2,800 to cover costs to attend the Mu Alpha Theta National Convention in San Diego, CA for three students and their teacher sponsor from one school. All chapters participating in Study Buddy are eligible to compete for this grant. Please inform NSTEP of your interest in attending under the Convention Grant in order to be considered. Congratulations to Austin High School in Decatur, Alabama, winner of the 2012 Grant to National Convention in Boston, MA!

NSTEP welcomes inquiries from both teachers and students. Please email gmartin@studybuddyhelp.org with questions about how you can integrate Study Buddy into your classroom or Mu Alpha Theta chapter! For additional information, please visit http://www.studybuddyhelp.org. Sign up your chapter today!

SPONSORS

- YOUR VOTE IS NEEDED! -

The Governing Council of Mu Alpha Theta is asking chapters to vote on changes to the National Constitution. The proposed changes have been attached to the end of this newsletter.

Please read through them carefully and email matheta@ou.edu by **Nov 15, 2012** with a yes or no vote on the changes. **Include the name of your school and your chapter ID number in the email. Each chapter gets one vote.**

If you have any questions, please contact the National Office.

Free "Hard Problems" DVD!

Mu Alpha Theta is offering a free copy of the DVD "Hard Problems" to any active chapter requesting one. Hard Problems is a feature documentary about the extraordinarily gifted students who represented the United States in 2006 at the world's toughest math competition - the International Mathematical Olympiad (IMO). One DVD per chapter while supplies last.

Free Mathematica Software!

Mu Alpha Theta has free copies of the computer algebra system Mathematica that it will award to a maximum of three students per active chapter. Students should be studying Calculus to receive a copy. To request copies, sponsors may email matheta@ou.edu with the names and email addresses of the students. The Mathematica software is a downloadable file and the license is good for one school year.

FUN ACTIVITY: MATH CIRCLES

Looking for fun math activities to try with your chapter? **See the website of The National Association of Math Circles, http://www.mathcircles.org/:**

"Mathematical Circles are a form of education enrichment and outreach that bring mathematicians and mathematical scientists into direct contact with pre-college students. These students, and sometimes their teachers, meet with mathematical professionals in an informal setting, after school or on weekends, to work on interesting problems or topics in mathematics. The goal is to get the students excited about mathematics by providing a setting that encourages them to become passionate about mathematics...Math Circles can have a variety of styles. Some are very informal, with the learning proceeding through games, stories, or hands-on activities. Others are more traditional enrichment classes, but without formal examinations. Some have a strong emphasis on preparing for Olympiad competitions; some avoid competition as much as possible. Models can use any combination of these techniques, depending on the audience, the mathematician, and the environment of the circle...One thing all math circles have in common is that the students enjoy learning mathematics, and the circle gives them a social context in which to do so".

The website has a collection of Math Circle Problems, lesson plans, and links to other resources. **Check it out!**

Do you have a college or university nearby? How about enlisting the help of some folks from there to enhance your chapter activities? Funding would be available, if needed, from our Mu Alpha Theta Chapter Grants.

You can now connect with Mu Alpha Theta and Chi Alpha Mu through Facebook. Add us as one of your favorite pages today!

CHAPTER GRANTS

Have you checked out our new chapter grants yet? Added in 2011, a chapter grant will provide **up to $1,000 for chapter activities** which stimulate an interest in mathematics. No chapter will be granted more than $1,000 over time, but a chapter may apply more than once if they have not reached their $1,000 limit. Go to the grants section at our website for ideas. Please remember that grants will be competitive and not all grant requests may be funded. Below are two examples of recent Chapter Grants:

UNIVERSITY HIGH OF LSU CHAPTER GRANT FOR PI DAY ACTIVITIES

"Everything was perfect including the weather. 300 middle school students and many high school classes were cycled through each event throughout the morning and at lunch. Our high school choir sang Pi day "carols" at middle school lunch and we used "Lost in the Digits" rap as our theme song before school and in-between classes to kick off the festivities. We partnered with our art department (Mrs. Von Brock) for the Pi Day T-shirt contest, the music department (Ms. Lauve) for the pi day carols, and the English/Drama department (Mr. Laverne) to produce the Euler Pi activity and to film and edit the event... We will do a post evaluation at our next club meeting. Already it has been suggested to add pi face painting. We also hope to include the upper elementary next year."

- Julie W. Owens, University High sponsor

University High members host Pi Day activities


Mu Alpha Theta members at University High of LSU

AIRLINE HIGH SCHOOL CHAPTER GRANT FOR SPEAKERS

Airline High School used their chapter grant to help host club meetings where presenters were invited to speak. Topics presented during the year were:

Dr. Tibor Szarvas – Logical Fallacies
Dr. Zsolt Lengvarszky – Origami
Dr. Paul Sisson – Mathematics Today and Tomorrow + Fractals
Dr. Rick Mabry – Pizza Cuts: Who Wins When the Cuts Are Off the Center?
Dr. Ben Rushing – Math in Music
Dr. Pat Wojtkiewicz – Where's the Math in the Criminal Lab?
Mr. Larry Galvin – Where's the Math in GM? (process engineer)
Mr. John Gibson – Math and Actuarial Science
Ms. Cathy Scott – Math and Mu Alpha Theta at Airline HS 40+ Years Ago

CHAPTER NEWS

USA Team Places Third, Shen Achieves Third-Best Score at 53rd International Math Olympiad

July 17, 2012 - Taken from the MAA Website (www.maa.org)

"Results are in for the 53rd International Mathematical Olympiad, which took place in Mar del Plata, Argentina. Team USA placed third overall with teammate **Bobby Shen (Mu Alpha Theta member from Dulles High School in Sugar Land, TX)** earning the third-best score among all individuals competing in the contest.

The International Mathematical Olympiad (IMO) is a six-problem, 42-point math competition held over two days. More than 90 nations compete in this annual event, which is the oldest of the International Science Olympiads. Questions cover a wide range of mathematics. Past IMO questions can be found [at www.maa.org].

This year, 548 students participated. Contestants with a score of at least 28 points received a gold medal. Silver medals were awarded to those garnering 21-27 points, and contestants with a score of 14-20 points were awarded a bronze medal. Singapore's Jeck Lim was the only contestant to achieve a perfect score of 42.

The team from the Republic of Korea placed first with a total score of 209, followed by the team from People's Republic of China with a score of 195. Team USA placed third with a score of 194.

'It was a very difficult IMO this year,' said Steven Dunbar, Director of MAA's American Mathematics Competitions. 'Problems 3 and 6 were especially difficult, but USA did very well on 3 with some interesting solutions!'"

The selection of IMO team members is based on participation in the AMC competitions. See www.amc.maa.org for further information about participating in these competitions.

Mu Alpha Theta Chapters Continue to Win Awards in Moody's Mega Math Challenge

Congratulations to all of the Mu Alpha Theta chapters who placed in the 2012 Moody's Mega Math Challenge! Of the 961 papers submitted, only 55 (5.7%) were chosen for awards. This year, Mu Alpha Theta had three schools place in the top six: Nashoba Regional High School (MA), Pine View School (FL), and Hunterdon Central Regional High School (NJ). The team from Nashoba Regional High School won an incredible $10,000 for their third place prize!

In addition to these three top-scoring teams, Mu Alpha Theta had several schools place in the semi-finalist and honorable mention categories. Of the six semi-finalists chosen, three were schools with Mu Alpha Theta chapters. These teams from Eastside High School (FL), Maggie L. Walker Governor's School (VA), and Pine View School (FL) all received prizes of $1,500 each. Schools which received the honorable mention prize of $1,000 each were Academic Magnet High School (SC), B. Reed Henderson High School (PA), Cheshire High School (CT), Eastside High School (FL), Ida S. Baker High School (FL), International Academy East (MI), and Montverde Academy (FL).

The M^3 Challenge is run by SIAM, the Society for Industrial and Applied Mathematics. The contest is internet-based and free to participants in selected states. Each high school may enter up to two teams of three to five junior/senior students. These teams have 14 hours to solve an "open-ended, realistic, applied math-modeling problem focused on a real-world issue." To learn more, go to http://m3challenge.siam.org/.

CHAPTER SNAPSHOT: ST ANTHONY CATHOLIC

SAINT ANTHONY
CATHOLIC HIGH SCHOOL

LOCATION: San Antonio, TX
SCHOOL POPULATION: 405
MEMBERS: 37
SPONSOR: Billy McWilliams
JOINED: Jan 17, 2012

Their chapter president, Mengxue Zhu, was a winner in the American Mathematics Contest in 2012, as well as another member, Brandon Verkamp.

Want to see your school in the newsletter? Email your chapter snapshot to matheta@ou.edu for a chance to be featured.

SCIENCE AND ENGINEERING FAIRS

Have your members participated in a local or regional science and engineering fair? Mu Alpha Theta continues its ongoing support of a special "Mu Alpha Theta Award" at regional and international competitions. Mu Alpha Theta also provides $4,500 in cash awards each year at the Intel International Science and Engineering Fair in May and provides judges to the event.

The Mu Alpha Theta Award is given to the most challenging, thorough, and creative investigation of a problem involving mathematics accesible to high school students. Components of the investigation may include, but are not limited to, mathematical proof, mathematical modeling, statistical analysis, visualization, simulation, and approximation.

The 2012 Internation Science Fair Award Winners were:

Caroline Jacquline Shouraboura & Shanthi Shanmugam
Forest Ridge School of the Sacred Hart in Bellevue, WA
Each won a $1,000 prize for their project: *Optimal Allocation of Global Constrained Resources Using the Hyperbolic Voronoi Diagram*.

Aishwarya Amanda Vardhana
Jesuit High School in Portland, OR
She won a $1,250 prize for her project: *Small Geometric Progressions Modulo N for Deterministic Polynomial Selection*.

Markus Robert Woltjer
Wilsonville High School in Wilsonville, OR
He won a $1,250 prize for his project: *Graph Theory and Locality Sensitive Hashing for DICOM Image Analysis*.

Thank you for all you do and for helping us to serve you better!!

ACTUARIAL FOUNDATION'S PROJECT MATH MINDS

Seeking Students for the 2013 Project Math Minds Scholarship Competition!

Introduce your students to the world of actuarial math and give them the opportunity to receive as much as $5,000 in scholarship awards.

In Project Math Minds, students use mathematics to solve problems that an actuary might address on the job. **This year's competition calls on students to use the math of debt, interest rates, and economics to estimate the costs of going to college versus the financial return after leaving college.** The top project will be eligible for a $5,000 scholarship. 2nd and 3rd place scholarships between $1,000 and $4,000 may also be awarded.

Encourage your students to participate in the 2013 Project Math Minds scholarship competition! Go to www.actuarialfoundation.org/programs/youth/MuAlphaThetaProject.shtml for instructions, rules, data, and guidelines for submissions.

Projects must be postmarked by **February 1, 2013**. Volunteer actuaries are available to help. Winners will be announced by April 1, 2013.

ROCKET CITY MATH LEAGUE

The RCML is a free, year-long, international math contest open to all middle, high school, and two-year college students enrolled in Pre-Algebra through Calculus and above math courses. It is administered by the students at Grissom High School in Huntsville, AL and supported by a grant from Mu Alpha Theta.

Participants are placed into one of five divisions based on the level of math courses in which they are enrolled. Each division will be given three, 12 question tests lasting 45 minutes. A two-level, interschool team test is also available. Tests are sent to registered schools via email before each round, and scores are entered into an online database. Trophies are mailed to the top-ranked students and schools at the end of the year. Mu Alpha Theta also provides other prizes as well, including copies of Mathematica, the DVD *Hard Problems*, and TI graphing calculators. Testing dates for the 2012-2013 competition are:

- **Interschool Test: Oct 29 – Nov 9, 2012**
- **Round One: Jan 14 – 25, 2013**
- **Round Two: Feb 11 – 22, 2013**
- **Round Three: March 11 – 22, 2013**

Register at www.rocketcitymath.org. For more info, visit the contests section at www.mualphatheta.org.

AMC

AMC 8: **November 13, 2012**
Early Registration Deadline: Oct 6
Regular Registration Deadline: Oct 27
Expedited Registration Deadline: Nov 3

AMC 10A/AMC 12 A: **February 5, 2013**
Early Registration Deadline: Dec 13
Regular Registration Deadline: Jan 17
Expedited Registration Deadline: Jan 31

AMC 10 B/AMC 12 B: **February 20, 2013**
Regular Registration Deadline: Jan 31
Expedited Registration Deadline: Feb 13

AIME I: **March 14, 2013**
AIME II (Alternate): **April 3, 2013**
USAMO: **April 30 & May 1, 2013**

LOG 1 CONTEST

This is an excellent opportunity for schools to participate in a mathematics competition similar to our National Convention contests. Schools compete against other schools from across the country and the world, while staying right at their own school.

The 2012-2013 Log 1 Contest will be run by the Hoover High School Math Team in Hoover, AL. The contest will consist of three rounds. In the first two rounds, students take one of two tests: Logs & Exponents or Matrices. These will be available for download on **Dec 1, 2012**. Each Topic Test will consist of fifteen open-answer problems to be solved without a calculator in thirty minutes. The second round tests are Sequences & Series or Geometry and will be available for download on **Jan 1, 2013**. The third round is an individual test of general mathematics knowledge and will be available for download on **Feb 1, 2013**. Problems will range from easy to difficult in an effort to provide confidence and challenges to all students.

The top ten individuals in each division in each region will receive a plaque and the next fifteen will receive a certificate. The top ten schools in each region will also receive a plaque. **This year, Mu Alpha Theta will award 100 e ($271.82) to each of the top ten schools in each region, for a total of $10,872.80 in prize money.**

The Log 1 contest is FREE, but participation is restricted to schools with active Mu Alpha Theta chapters. To register or for more info, see the *Contests* section of www.mualphatheta.org.

MATHEMATICAL MINUTES VIDEO CONTEST

The Mathematical Minutes Video Contest wants members to create educational and entertaining math videos. Eight videos will be chosen for the final round of judging. Up to $2,250 will be available to be split amongst the entries by quality. All videos will need to be submitted before **January 31, 2013 at midnight EST.** To view guidelines and a short video presentation, go to www.mualphatheta.org > *Contests*.

STUDENTS

MESSAGE FROM YOUR STUDENT DELEGATE PRESIDENT

NATIONAL STUDENT DELEGATE OFFICERS:

PRESIDENT
Pablo Hernandez
Region IV
Miami Springs HS
Miami Springs, FL
phernandez1995@gmail.com

VICE PRESIDENT
Joyce Kang
Region III
Brentwood HS
Brentwood, TN
blossomqueen17@gmail.com

SECRETARY/TREASURER
Kanoe Shizuru
Region I
Kamehameha Schools
Honolulu, HI
k13jashiz@gmail.com

PARLIAMENTARIAN
Anthony Hresko
Region II
Stephen F. Austin HS
Sugar Land, TX
ashresko@comcast.net

Hello everyone,

I would like to take a moment to introduce myself, along with the other recently elected Student Delegate officers. I am Pablo Hernandez from Miami Springs Senior High in FL. Besides being elected President, I will be representing Region 4 throughout the year. Joyce Kang from Brentwood High in TN is this year's Vice-President and will represent Region 3. Kanoe Shizuru from Kamehameha Schools in HI will be this year's Secretary and represents Region 1. And from Region 2, Anthony Hresko of Stephen F. Austin High in Sugar Land, TX is our Parliamentarian. We have been talking frequently with one another, planning events and sharing possible ideas for next year's National Convention in San Diego, California.

This past July in Boston, the Student Delegates from each school met together and got to know one another. We worked to design a t-shirt for Chi Alpha Mu, the math club for middle school students. We enjoyed countless experiences together as we sat down to take this year's Mystery Test and worked hard to tackle events such as the first-ever Cyborg Interschool. New friendships were made, concepts were learned, and, overall, this past convention was fantastic. I believe next year's will be even better, with many activities and new opportunities for students to win trophies.

If any of you are interested in or would like to submit an idea that we might implement at the national convention, you can reach me at phernandez1995@gmail.com, or just send me a Facebook message. We, the officers of the Student Delegation, invite you to next year's convention in San Diego, and cannot wait to see all of you there!

Pablo Hernandez
Student Delegate President

MATH PROBLEMS

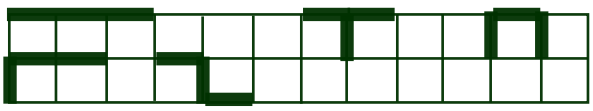
#1 Using only addition, subtraction, division, and multiplication, can you make 24 out of each of the following sets of four numbers. For example, the set 1,5,7,9 yields (7-1) * (9-5) = 24.

1,7,7,9	2,4,5,6
2,2,4,5	3,3,3,5
2,3,5,9	3,8,8,8
1,3,6,9	2,3,3,3
5,5,7,7	2,4,5,8
1,3,4,6	1,5,5,5
1,4,5,6	1,6,6,8

(Answers on page 13)

#2 Polypicks, our term, are plane configurations that can be made by connecting congruent toothpicks end-to-end on a rectangular grid. There are five such polypicks (shown below) with three toothpicks since shapes obtained by translation, rotation, or reflection are not considered different.

There are 16 possible "tetrapicks" - polypicks made with four toothpicks. How many can you make? Answers will be posted on Mu Alpha Theta's Facebook Page.



SUMMER GRANT EXPERIENCES

Each year, Mu Alpha Theta offers Summer Grants of up to $2,000 for full members to work on a mathematical research project or attend a summer mathematics course not available at their high school or two-year college. Would you like to participate in a program like those described below? Here are reports from two of last year's recipients:

Karen Yang from Klein High School in Spring, TX attended Stanford's SuMac:

"Upon reflection of the 4 weeks of my life that flew by so quickly this summer at SUMaC, I have come to the conclusion that they were some of the most influential and life-changing moments of my life.

Academically, the excellent program SUMaC offered provided just the right amount of rigor; I attended program I, which began with number systems and finite algebraic structures, and gradually transferred to abstract algebra, number theory, and permutations before wrapping up with partitions, cosets, quotients, rings, and fields. The course was able to introduce relatively new topics to me, and broadened both my perspective of and intrigue towards mathematics. The structured program allowed the students to effectively use all of their time, with lectures in the morning, problem sets in the early afternoon, and usually planned activities later in the day, which sometimes involved informative guest lectures given by Stanford professors. Everyone also participates in research which culminates into a presentation at the end of the program; my research topic, cryptography, allowed me to explore the real world application of mathematics in ways I could never have imagined before. The incredible amount of mathematics I learned in that short period of time provided me a sense of immense joy in my newfound knowledge.

Beyond the academics of the program, SUMaC offered many activities for fun bonding moments, such as a trip out to San Francisco, SUMaC Olympics, and a talent show, just to name a few. After 4 weeks of collaborating with TA's and other campers, I felt incredibly close to each and every individual like I had known them for years...The unbelievable memories of unimaginable joy and intense math that I shared with everyone created, quite simply, the most amazing time of my life... I would strongly recommend anyone interested to apply to SUMaC, as it will definitely be a decision they will never regret."

Leigh Braswell from the AL School of Fine Arts in Cullman, AL attended Canada/USA Math Camp:

"Ever since I departed from the AwesomeMath Summer Program last year, I knew I wanted to attend a math camp again this summer. I finally decided on Canada/USA Math Camp, mainly because it lasted longer than AMSP (five weeks instead of three) and seemed to be less focused on contest and more on college-level mathematics, an area I had not previously been exposed to. Indeed, during my time at Math Camp, I was completely inundated with higher level mathematics- even the notation seemed unfamiliar! However, I soon became quite comfortable dealing with this new and fascinating language as I navigated my way through an incredibly interesting multitude of classes. I started with crash courses in linear algebra, multivariable calculus, group theory, and ring theory, all subjects I had merely heard of prior to camp. These Week 1 classes were invaluable in the weeks to come; for example, in just a few days, the amazing multivariable calculus teacher gave me such a solid foundation that in latter weeks I was able to understand classes on complex analysis and attend lectures on topics such as using double integrals to find the sum of the reciprocals of the squares of the positive integers. Not only did my proficiency in calculus skyrocket, but I become very familiar with topics in graph theory, combinatorics, and invariant theory. I am now able to prove theorems I never knew existed, including the Redfield Polya Theorem, whose application allows me to count the number of distinguishable bracelets with different numbers of colored beads, without using brute force! I even had the privilege of attending classes on olympiad problem solving with themes such as polynomials, inequalities, and Putnam problems. Basically, every single one of the classes I attended in this short time was great preparation for the math I will do in upcoming years, both in school and in contests. I so look forward to applying the techniques and skills I gained at Math Camp very soon!

However, to just talk about the success I had with the academic program at Math Camp would be leaving out a very significant part of what made my experience unforgettable. The culture of Math Camp is unlike anything I have ever been a part of before; a community of mathematicians, scholars, ultimate Frisbee players, singers, dancers (etc.) makes for the most welcoming and incredible summer camp environment....This experience will stay will me forever, and I promise, the knowledge I gained will not be wasted!"

Go online to www.mualphatheta.org for more opportunities like this one!

MU ALPHA THETA SCHOLARSHIPS

Mu Alpha Theta will award a limited number of $4,000 scholarships this year. Scholarship funds may be used within the first 18 months from the date the scholarship is awarded. Any graduating high school senior or two-year college student who is an active member of a current Mu Alpha Theta chapter is eligible. The nominee should be an outstanding mathematics student and should have shown loyalty and dedication to their Mu Alpha Theta chapter, enthusiastically participating in local projects with evidence of service in the area of mathematics. **Each chapter may submit applications for up to three active, student members.** It is up to the chapter sponsor to determine what names to submit, if more than three students wish to apply. One Mu Alpha Theta Scholarship has been designated as the Mary Rhein Memorial Scholarship. The most outstanding student selected for a Mu Alpha Theta Scholarship will be designated as the winner of the Mary Rhein Memorial Scholarship and will receive an additional $1,000. In addition to the qualifications above, this student will also have participated in local, regional and national mathematics competitions with distinction. Members may apply for these scholarships by downloading the application from the scholarship link at www.mualphatheta.org. **The application must be postmarked before March 1, 2013.**

2012 SCHOLARSHIP WINNERS:

MARY RHEIN MEMORIAL SCHOLARSHIP:

Jeremy Liu of Buchholz High School in Gainesville, FL: Yale University

MU ALPHA THETA SCHOLARSHIPS:

David Builes: Duke University
Chloe Choe: University of Washington
Manali Gokhale: Princeton University
Michael Goodman: University of Florida
Radhika Gupta: Columbia University
Mitchell Harris: University of Florida
Emily Hernandez: MO University of Science & Tech
Nathan Justus: University of Oklahoma
Dae (Daniel) Kang: Princeton University
Seth Lauer: Rice University
Lauren Levenhagen: Auburn University
Molly Merritt: Georgia Institute of Technology
Pratheek Nagaraj: MIT
Sruthi Narayanan: MIT
Jin Kyun (Luke) Oh: Cornell University
Edwin Park: Stanford University
Payal Patel: University of Miami
Adityanaraya Radhakrishnan: MIT
Daniel Richter: University of Miami
Yue Sha: University of Southern California
Logan Stern: Washington University in St. Louis
Adam Su: Harvard University
Shannon Williams: Auburn University
Linda Xu: Harvard University

2012 AWARD WINNERS:

Huneke Award presented to
Susan Hiller
former sponsor at Vero Beach High School in Vero Beach, FL

Kalin Award presented to
Dae (Daniel) W. Kang
Rickards High School in Tallahassee, FL

National Convention Sweepstakes Winner
Buchholz High School in Gainesville, FL

PROJECT MATH MINDS WINNERS:

First Place: Pushkar Aggarwal from Poolesville HS | Second Place: Murali Subramanian & Alec Doederlein from the School of Science & Engineering Magnet | Third Place: Amy Glaskova from Shorecrest HS & Sein Oh from the School of Science and Engineering Magnet

#1 Answers

1+7+7+9	(4*5)+6-2
2+2+(4*5)	(3*3)+(3*5)
(3*9)-5+2	(3*8)*(8/8)
9*(3-1)+6	2*[(3*3)+3]
5+5+7+7	2*4*(8-5)
6/(1-3/4)	5*(5-1/5)
4/(1-5/6)	6/(1-6/8)

#2 Answers will be posted to the Mu Alpha Theta Facebook Page!

CONSTITUTIONAL CHANGES
FALL 2012

Below, find the old and new wording for constitutional changes to Articles IV and V. **Each Mu Alpha Theta chapter has one vote.** Email your chapter ID, the name of your school, and a vote "for" or "against" the new wording.

OLD WORDING:

Article IV-- **Chapters**

SECTION 1: **Qualifications for Chapters**

Any high school, two-year college, or other academic institution giving training equivalent to one of these, may petition to have a chapter, providing it meets the following minimum requirements.

(1) At least three semesters of algebra and two of geometry or their equivalent, and one semester of more advanced mathematics (or, in the case of two-year colleges, courses for which these are prerequisites, and which include at least three courses in calculus, linear algebra, or statistics) must be offered. These requirements cannot be fulfilled by courses in general mathematics, general business mathematics, or arithmetic.

(2) During the two semesters preceding that in which a petition is submitted, the school must have employed at least one teacher whose primary teaching field is mathematics and who has completed an undergraduate mathematics major or its equivalent at an accredited college or university. The equivalent of a mathematics major shall be understood to include differential and integral calculus and at the very least, six semester hours of mathematics content courses above that.

.

.

(5) High School chapters shall be admitted for membership on the approval of the President and the Governor of the appropriate region. Two-Year College chapters shall be admitted for membership on the approval of the President and the AMATYC Representative. Should either deny a petition for membership, the school may appeal the decision to the Governing Council for consideration. Here a favorable two-thirds vote of the Governing Council shall be required to elect a chapter to membership.

NEW WORDING:

Article IV-- **Chapters**

SECTION 1: **Qualifications for Chapters**

Any high school or two-year college, with accreditation from a recognized accrediting agency and offering courses in mathematics, may petition to have a chapter, providing it meets the following minimum requirements.

(1) High schools must offer at least two years of algebra and one year of geometry, or their equivalent, and a minimum of one year of more advanced mathematics. These requirements cannot be fulfilled by courses in general mathematics, general business mathematics, or arithmetic. Two-year colleges must offer at least three courses beyond pre-calculus, which include calculus, differential equations, linear algebra, or statistics.

(2) The school must employ at least one teacher whose primary teaching field is mathematics and who has completed an undergraduate mathematics major or its equivalent at an accredited college or university. The equivalent of a mathematics major shall be understood to include a minimum of six college mathematics courses at the calculus level or above.

.
.
(5) High School chapters shall be admitted for membership on the approval of the President and the Governor of the appropriate region. Two-Year College chapters shall be admitted for membership on the approval of the President and the AMATYC Representative. Should either deny a petition for membership, the school may appeal the decision to the Governing Council for consideration. A two-thirds vote of the Governing Council shall be required to approve such a chapter for membership.

OLD WORDING:
Article V--**Membership**

The following minimum requirements for full and associate membership shall be common to all chapters:

(2) Full membership:

a) High school students in grades 9 through 12, at the school where their permanent record resides, who have completed the equivalent of four semesters of college preparatory mathematics and in addition have completed or are enrolled in a still more advanced course, are eligible for full membership providing their mathematical work was done with distinction. On the 4-point grading scale, this shall mean at least a 3.0 grade point average.

(3) Associate Membership:

High school students in grades 9 through 12 at the school where their permanent record resides, who have completed two semesters of algebra or their equivalent with distinction and are enrolled in, or have completed, a semester of geometry or of second year algebra, are eligible for associate membership. Associate members do not pay the initiation fee, but should be registered with the national office so that they may attend the National Convention. They are not entitled to vote on national policy, however. They are entitled to attend and be heard at meetings and presumably are likely candidates for full membership.

NEW WORDING:
Article V—**Membership**

The following minimum requirements for Members and Associates shall be common to all chapters:

(2) Members:

a) High school students in grades 9 through 12, at the school where their permanent record resides, who have completed the equivalent of two years of college preparatory mathematics, including algebra and geometry, and in addition have completed or are enrolled in a still more advanced course, are eligible for membership providing their mathematical work was done with distinction. On the 4-point grading scale, this shall mean at least a 3.0 grade point average.

(3) Associates:

High School students in grades 9 through 12, at the school where their permanent record resides, who have completed one year of algebra, or its equivalent, with distinction and are currently enrolled in a higher math course are eligible to be Associates of Mu Alpha Theta. **Associates are not members of Mu Alpha Theta but are likely candidates for membership.** Associates do not pay the initiation fee but are eligible to be listed with the National Office, should they wish to participate in Mu Alpha Theta national math contests. While they are not entitled to vote nor hold office in their chapter, they are entitled to attend and be heard at meetings. A student may remain an Associate for only one year and then, if eligible, must be inducted as a Member of Mu Alpha Theta