SPRING 2013

CHI ALPHA MU NEWSLETTER

NEWS FROM THE PRESIDENT

As far as I can tell, this is the first spring newsletter for Chi Alpha Mu since the club was reactivated in 2008, so I guess we are making history here! I hope you have had a good, productive year. You are probably preparing your students for some sort of competency tests this spring. If you have a good group of mathematicians you might want to employ them as tutors for individuals who are struggling. As you know, teaching is the best way to master any subject.

You will also have some of your club members graduating from middle school. If you have a Mu Alpha Theta chapter at your high school, introduce your graduates to the coach if they haven't already met and encourage them to volunteer until they are eligible to apply for membership in Mu Alpha Theta. If you don't have a Mu chapter at your high school, try to find a teacher willing to be a sponsor and have them fill out the petition found at www.mualphatheta.org. The benefits of belonging to Mu Alpha Theta include free competitions, summer grants, scholarships, cash awards, and a fantastic summer convention. Mu Alpha Theta members have contact with other Mu members from all over the world who share their love for math.

Thank you for all your time and hard work. Without teachers like you who are willing to spend many hours planning activities and running practices and competitions there could be no Chi Alpha Mu. I hope your summer is great and that you come back to school in the fall ready to continue the leadership of your club. If you have questions or suggestions for how we can serve you, please contact me at botzner@gmail.com or Kay Weiss, the executive director of Chi Alpha Mu, at matheta@ou.edu.

Thanks again,

Elizabeth Carol Botzner

Chi Alpha Mu President

NEWS FROM THE NATIONAL OFFICE *by Kay Weiss*

Little by little, more middle schools are starting math clubs and associating with Chi Alpha Mu. See the articles later in this newsletter about activities in which our chapters are involved. **We would love to hear from you!**

Can we help to buy materials or math games for your club? Do you want to attend a math competition or run a fun Math Night for your students and their families? We would love to provide some financial support with a Chapter Grant. Use your imagination and let us know how we can help.

Middle school can be a tough time in the life of a student who thinks math is fun. There are so many social pressures, especially for the girls, to dumb down and not show they are smart in math and science. A math club is a great place to join with others that like to think and study the order in our world and how math explains so much.

The internet opens many doors. There are great resources online, including math games and activities using real world data to do math. Looking for an activity that helps to explain a math concept? Try some of the links at the Chi Alpha Mu website. If you find other links you want us to add, let us know.

How about this Pi Day activity: Get a bunch of circles. I like to collect different jar tops, coins, glasses, or cups with a circular top, etc. Make sure you have different size circles, big and small. Give each group of students three circles to measure. Each group will also need a ruler and a string long enough to wrap around the largest circle. Have the students use the string to try to measure around the circles. They should wrap it around the circle and then pull it out straight along the ruler to find the circumference. (This is a great time to talk about the accuracy of our numbers when we measure something.)

Each group needs to measure the diameter of their circles as well. Neither measurement is easy to do accurately. Have your students make a chart listing their tries for each circle. I recommend five tries at the circumference and five tries to get the diameter of each of the circles. Next, talk about taking an average of their answers and about how many digits to keep in the answer after finding the average on a calculator. Just because the calculator gives the average to six decimal places, how many decimals should we keep in our answer? Why?

Each group needs to come up with the average diameter and circumference for each of their circles. Finally, set up a graph that all the students can see. Put the circumference, C, on the y-axis and the diameter, d, on the x-axis. Get the values from each group for their circles and plot each circle's values as points with (d, C). The points should plot along a straight line with the slope equal to π. Again, with luck, the calculation will be good to a couple of decimal places so they will realize what they have found. If you have already talked about lines and slope, let them do the calculation for the slope themselves. If not, you can just have each group calculate the value of C divided by d on a calculator for each of their circles to get an estimate of π. Then talk about the formula $C = \pi d$.

If your students haven't had algebra yet, this is a great time to talk about formulas and variables, etc, etc, etc.

Have other good Pi Day activities to share? Let us know!

- FREE TI-84 PLUS CALCULATORS! -

The National Office has five free TI-84 Plus calculators to give away. The first five chapters to email matheta@ou.edu and request one will receive one calculator each. Chapters who have received a calculator in the past two years are not eligible.

NEW ITEM: TEMPORARY TATTOOS!

Chi Alpha Mu has added a new merchandise item. Temporary tattoos of the Chi Alpha Mu logo are now available to purchase for $0.25 each.

To view a complete list of our merchandise items, visit the *Merchandise* page of www.chialphamu.org.

CHAPTER GRANTS

Chapter Grants are available for up to $250 per chapter and may be used to support your activities. No chapter will receive more than $250 over time, and we may not be able to support all grant requests or provide the full amount you request, but let us know how we can help. Funds could be used for activities such as a Pi Day celebration, inviting a special speaker to talk to your students, traveling to a math competition, math games or software for your club, or other math-related activities. The grant application can be found online under *Chapter Grants*.

CHI ALPHA MU COORDINATOR

Chi Alpha Mu is still looking to select a Chi Alpha Mu Coordinator. This person will help write and edit the newsletter twice a year, come up with ideas to promote math to Chi Chapters, provide outreach to existing chapters and promote membership with new schools. The Coordinator may also help approve Chi Alpha Mu Chapter Grants. In return, Chi Alpha Mu will provide $500 to the Coordinator's club for services rendered. The position has a one-year renewable term, should the arrangement work out. $250 will be sent to the club in September 2013, after the fall newsletter is completed, and the other $250 will be sent in March 2014, after the spring newsletter has been sent out. The application has been posted online.

FREE RESOURCES FOR CHAPTERS

Free Key Curriculum Tinkerplots Program and Workbooks!

Key Curriculum Press has donated copies of their TinkerPlots Program, copies of "Digging into Data with TinkerPlots" and copies of their "Survey Toolkit Workbook". Each winning chapter of Chi Alpha Mu will receive a single user copy of the program and four or five copies of each of the two workbooks.

Want to win? Email us with information about what your chapter has been doing during your meetings. Have a fun idea or activity to share with other chapters? We want to hear from you!! Send a picture or two that we may use in our next newsletter. The value of each prize package is about $450. Email Kay Weiss at matheta@ou.edu with your chapter activity!

Free AMC 8 Practice CDs!

MAA has donated copies of their AMC 8 Contest Practice CD. These include the American Junior High Mathematics Exams from 1985-1999 and the American Mathematics Contest 8 from 2000-2007. Email matheta@ou.edu and request your free copy today.

MATH PROBLEM: CRYPTARITHMS

Back in 1978, Richard and Josephine Andree came up with a number of fun mathematical activities for students. Cryptarithms was one such idea. A cryptarithm is a puzzle made by substituting letters for digits in a simple arithmetic problem. A given letter stands for the same digit throughout the puzzle, and no digit is represented by more than one letter.

Example 1:
```
  AT
 +A
 TEE
```

Logic: The T + A added in the one's column has to add to more than 10, so that something carries over to the tens place. Let's call this carry over number, C. When C is added to A, in the ten's column, it too is larger than 10, putting "T" in the hundred's place. So we know that

$T + A = 10C + E$ from the ones place addition.
$C + A = 10T + E$ from the tens place addition

Obviously C = T It is fairly easy to see that if T = 1 and A = 9, T + A = 10, so C would be 1 and E = 0. So C = T, as required. The problem then translates to:

```
  91
 +9
 100
```

Example 2: $(XX)^2 = MMCC$

X can't be 1 or 2, since $(11)^2$ and $(22)^2$ = only a three digit number
Trying the numbers 3 through 7 doesn't give repeating digits. But $(88)^2 = 7744$.
Thus X = 8, M = 7, and C = 4.

Here are four problems to try on your own. How about having your students make one up on their own?

1.
```
   A
  HE
+ HE
 AHA
```

2. $(BE)^2 = BEE$

3. AA + AA = BAY

4.
```
  SONG
 * GO
 SONG
+ LEASG
 LONGDG
```

Answers can be found on page 6.

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CHAPTER NEWS

Betsey Batten, sponsor of the club at Greenbrier Middle School in Chesapeake, VA, wrote about what her club has been doing this year:

This is our first year with a Chi Alpha Mu chapter. We sent invitations to 100 students and 34 showed up for our informational meeting and all said they would be back. Our first "gig" was to present at the elementary school that feeds students to our middle school. They have a STEM and M night (STEM plus M for muscle/fitness) and asked us to present a hands on activity for the kids. The students planned activities to spur an interest in math and science. One activity was called "What Floats your Boat?" where students tried to get their aluminum foil boats to hold as many pennies as possible.

Many of the students in our chapter had participated in SEAPerch and wanted to show off their Underwater ROVs. SeaPerch is an innovative underwater robotics program that equips teachers and students with the resources they need to build an underwater Remotely Operated Vehicle (ROV). (*Photo to the right*)

Our peer tutoring program has been a huge success. The 8th grade students love helping the younger students.

We held "Munch and Math" meetings during lunch twice each month. Students would participate in math activities such as geometry bingo and tangram puzzles while eating. Finding time for meetings was the hard since the students participate in so many after school activities.

In January, we held a Peer Tutor Training Program, supported by a Chi Alpha Mu Chapter Grant. The students stayed after school on a Friday. They went to three math review sessions on the topics they would be tutoring during the next nine weeks. They also watched a video "How Difficult Can This Be" where they saw the issues that students with learning disabilities encountered. We had a pizza dinner and held an Amazing Math Race. The students had to race around the school and compute various "mathy" things – like find the perimeter of the lunch table and add the room numbers of all the 8th grade classrooms. The winners each took home a $10 gift card to Starbucks! The students loved our Peer Tutoring Night and want to do it each nine weeks!

Our plans for Pi Day on March 14th are to hold a can food drive. For each can of food that a student donates, he or she will receive one vote – a vote for which teacher will get "pi-ed". This has been a wonderful experience for the students. They love being "Chi Alphas" and helping out the younger students. I am already planning for next year! I want to participate in some of the math competitions. We would also like to extend our tutoring program to include some Saturday programs.

CHAPTER NEWS

I wanted to share some photos of our math club end of year banquet last June. We had a spaghetti dinner in my classroom and it turned out to be a special evening the for kids. We gave out prizes for a drawing, but the main prize was the Golden Calculator Award. This award went to the member that consistently showed great enthusiasm and dedication to the club. We awarded him the free TI-84 Plus calculators that you gave away last year. He was very excited to win such a nice calculator for high school. Thank you for all you do to support us in mathematics!

Leslie Santillan
Robert C Fisler School
Mathena Math Club Co-Advisor

CRYPTARITHM ANSWERS:

1. 1 95 + 95 191

2. $(10)^2 = 100$ (Have you students prove this is the only possible solution.)

3. 99 + 99 = 198

4. 5126 * 61 5126 + 30756 312686