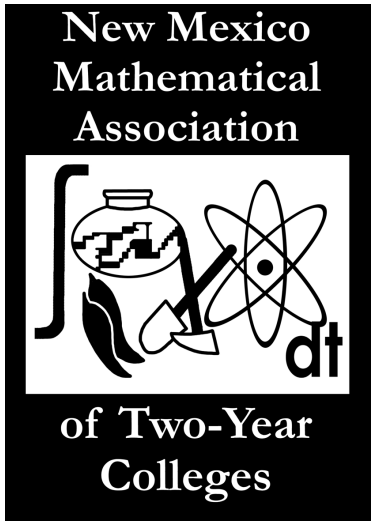


NMMATYC News

November 16th , 2010

Volume 24 **Issue 1**

2010-2011 NMMATYC Board

President	Ali Ahmad Dona Ana C.C.	aahmad@nmsu.edu
President-Elect	Philip Kaatz Mesalands C.C.	philipk@mesalands.edu
Past-President	Joanne Peeples El Paso C.C.	joannep@epcc.edu
Secretary	Diana Orrantia El Paso C. C.	dianao@epcc.edu
Treasurer	Janet Macaluso ENMU-Roswell	janet.macaluso@roswell.enmu .edu
Newsletter Editor	Suzanne Hill Dona Ana C. C.	suhill@nmsu.edu
Nominating Committee Chair	Mary Caffey Clovis C. C.	mary.caffey@clovis.edu
Membership Committee Chair	Alan Mabry Dona Ana C.C.	wmabry@nmsu.edu
AMATYC Delegate	Phillip Kaatz Mesalands C. C.	philipk@mesalands.edu
Articulation TaskForce Liason	Judy Lalani Central New Mexico C. C.	jmlalani@cnm.edu
Web Master	Tom Kaus UNM-Gallup	tkaus@unm.edu
2011 Conference Chair	Janet Macaluso ENMU-Roswell	janet.macaluso@roswell.enmu .edu

New Mexico Mathematical Association of Two-Year Colleges

New Mexico Mathematical Association of Two-Year Colleges

NMMATYC News

Volume 13

Issue 2

Inside this issue:

President's Message

Ali Ahmad

Dear NMMATYC colleagues,

I hope you are having a great fall semester. I would like to start this message with some good news! The spring conference in Gallup was successful. Thanks to all of you for making it a great conference.

At this conference we distributed the following:

- The David Lovelock Teaching Excellence Award to Paul Mason from Dona Ana Community College
- The Professional Development Award to Joanne Ortiz from Central New Mexico Community College
- The Michelle Jimenez Scholarship to Theresa Klein from University of New Mexico at Valencia
- The Vicki Froehlich scholarship to Ignacio Sandoval from EL Paso Community College,
- And the Celeste Nossiter Book Scholarship to Liliana Acosta from El Paso Community College.

We would like more nominees for the 2011 David Lovelock Teaching Excellence Award. Please consider nominating your colleague or yourself. It's a great idea to demonstrate that you or your colleague are doing an outstanding job in teaching. The guidelines for nominations are as follows:

- Nominations may be made by any individual or group, including self-nomination.
- The nominee must be a NMMATYC member currently employed as a mathematics instructor in a two-year college or other institution granting associate degrees.
- The nominator is responsible for completing the nomination form, the nominator's packet checklist and for submitting the completed nomination form to the NMMATYC Nominating Committee Chair.

President's Message Continued...

I would like to bring in new members to NMMATYC this year. You can help with this effort by encouraging your colleagues either full time or part time faculty to join NMMATYC. The membership fee is only $10.00 for one academic year.
There are many opportunities to when you are active with NMMATYC. You can attend the annual conference, renew your membership, run for an officer role and share your innovative ideas of teaching through our newsletter. We are living in a technology era where many creative paths for teaching are available. Please consider sharing with NMMATYC members your creative ideas by presenting at our annual conferences or writting articles in this newsletter. If you have integrated any of the new technology tools with your math courses such as iPods, iPhones, Face Book and YouTube, this could be an interesting topic to talk about. Math textbook publishing companies have great resources of online software programs such as MyMathLab, ALEKS, MathTV, Hawkes Learning System, WebAssign,.. and more. These online options provide our students with self-paced tools to learn new concepts and to reinforce their math skills. It would be a great idea to share with us your success stories regarding any of these tools or other activities.

I would like to thank Mary Robinson for her many years of sponsorship of nmmatyc.org. We are developing a new website, most of the information is already available. The new site is http://nm.matyc.org. Thanks to AMATYC for hosting our new site.

Please feel free to contact me or any member of the Board if you have any ideas or thoughts that will help to make NMMATYC stronger. I am looking forward to seeing you at our next annual joint conference with MAA in Roswell in May. The conference chair has lots of ideas for an exciting conference.

Best wishes,

Ali Ahmad

Professional Development Funds Available

Apply now for up to $300 in funds offered each year to NMMATYC members to help defray expenses for **any** type of professional development activity. Consider using the money to attend this year's NMMATYC Conference in Roswell on May 20th and 21st. An application is available at www.nmmatyc.org. For additional information, contact Ali Ahmad, NMMATYC President, at aahmad@nmsu.edu. The deadline to apply for 2011-2012 funds is April 1st, 2011.

Students Present Lessons

By Fariba Ansari

The objective of my research was to show that students at EPCC find it beneficial to be involved in their own learning by presenting material the instructor hasn't covered yet. Furthermore, the purpose for using this method was for students to see how they could succeed at presenting themselves and their work in front of a crowd and to realize their own potential when they demonstrate their abilities. In order to accomplish this task students were placed in heterogeneous groups because I believe that this type of grouping improves learning. Therefore, students from different backgrounds and knowledge were placed into groups of four, and then asked to present a new chapter with a rubric to follow. The survey of all the students showed that they did prefer the peer presentations over traditional classroom designs. The findings in this study are beneficial to other teachers who are looking for alternative teaching methods as and supports the effectiveness of this method for others to use.

In an effort to develop more effective methods to assess student learning outcome for the Conceptual Physical Science course at EPCC, two strategies were employed in two different classes. A third class was the control group. First, a series of rubrics was developed, and second, a comprehensive student survey was created to study students' performance data and suggests improvements for future years. The goal was to have at least 75% of the students in the class complete the course with a score of 3, measured through the rubrics developed internally and presented later on this report. Students were broken into collaborative teams of four to create a model of various physical properties of matter and to demonstrate it in front of the class. The strategies that were developed were Self-Evaluation, Mentoring-Review Teaching, Cooperative Learning, Workgroups, Inclusion, Direct Measurement, Summative Assessment, and Formative Assessment.

The series of rubrics used consisted of four different assessment approaches: Student Performance Evaluation (PACES); Students' Peer Presentation Evaluation; Physical Model Project Evaluation or Evaluation; and Teacher Evaluation of Student Presentation/Demonstration. Students' Performance Evaluation (PACES) is a self and peer evaluation form for teamwork. All students in a team complete this form individually. This is a confidential evaluation and it's never shared with the rest of the group. Later, the instructor compares all evaluations for each team. The Students' Peer Presentation Evaluation is a self and peer evaluation form. Students on a team complete one of the forms individually and in confidence from their group. Later, the instructor compares all evaluations of the same team. The Physical Model Project Evaluation or Demonstration rubric presents minimum requirements to grade physical models. Its purpose is to provide students with a general idea of requirements in advance for formal and summative evaluation of the students' learning. This form may be modified to suit any assigned project. The Teacher Evaluation of Student Presentation /Demonstration is a self and peer evaluation form. Students in a team complete one of the forms individually and in confidence from their group.

Later, the instructor compares all evaluations of the same team.

The outcome showed that the classes with the implementation of the new strategies had a better result compared to the control group or traditional classroom.
The class average of the first group was 86.5% and the average of the second group was 83.4%. For the control group, the average was 79.5%. In conversations with other colleagues, some unintentional results were discovered. A colleague who shares the same students in her math class commended me because the students in my conceptual physics class were ahead of the other students, since they had already been introduced to concepts such as conversions and measurement.

The following chart shows the results of the Student Survey. Expanding on the concept after students' presentations, Peer to Peer presentation, and reviewing problems on the board were the most effective strategies.

Fariba Ansari
El Paso Community College
fansari@epcc.edu

Tally of Most effective strategies according to 61 students surveyed

STRATEGY:	Currently more effective	Will like to include more…
Expanding on Concept after students' presentations	1111111111111111	1111
Reviewing Problems on the board	1111111	1111
Creating a Study Guide or outline prior to tests	111	1111
Collaborative work (team -work)	11111	111
Peer to Peer presentations	11111111111111111111111111	11
Group tests	1111	11
Student hands-on exercises	11	1111111
Other strategy	1	

l 2006 -- Paul G. Hewitt, Conceptual Physics 10th Edition –Pearson
l P.A.C.E.S Evaluation Rubric by R. Q. Gonzalez -EPISD

New Mexico Mathematical Association of Two-Year Colleges

Math Appreciation for Liberal Arts Majors

By R. N. Baker

The NMSU course description for its Math 210 course called Math Appreciation says: "Mathematics and its role in the development and maintenance of civilization." To me, it's like a match made in heaven. My first MA was in mathematics, my second MA was in history. Ahhhh, a real integrator.
Some schools make their Math for Liberal Arts course an overview of all the undergrad math topics that don't fit into the algebra sequence--graph theory, apportionment theory, probability and game theory, and all. A standardized, hundred dollar textbook students can't wait to sell, drives the description and the course. I enjoyed teaching such a course in Alaska, investigating a delightful array of problems seldom examined in public school math programs.

Eventually, I took a sabbatical from teaching math to obtain further graduate education, lo, in a liberal art. I talked to my peers in the history department--professors and graduate students--about math for liberal arts majors. Many gave candid and in-depth responses to my inquiries.
They can learn to smile and laugh while we watch them pretending to enjoy playing with numbers and quantities, but they hate it. That is someone else's job. Their realm is words--words create humor and flesh out concepts, words allow irony and soul in a way standardized American math texts don't. The liberal arts students want human stories with *evolving* relationships. For their investigative play, in their search for truth, they read, write and discuss. That is an entirely different approach than science-kinds who prefer to play with manipulatives, than math-kinds who find more satisfaction playing with abstract, *well-defined* relations. "Functions, that's like sentences with only verbs and adjectives, right?" And those liberal artists can be stubborn about staying in their realm of strengths and comforts.

Research play time over, I went back to work. I came to NMSU in Grants, and in 2008 got assigned to teach Math 210, and then told to choose my text. I thought, hmmm, wait, first, look at *our* course description. "*Mathematics and its role in the development and maintenance of civilization*." All the standardized texts I looked at addressed the course description from Alaska, but not NMSU's. Over the decades I had test-run enough auxiliary materials to engage our course description fully, meeting math expectations while accessing my history peers' well-elucidated list of liberal artists' strengths. Not a text, but four books, costing under fifty dollars total. (Two of which they tend to keep!) Students read a couple chapters and write a response essay per week, all semester.

We first read David Ewing Duncan's ***Calendar: Humanity's epic struggle to determine a true and accurate year***. Duncan traced that epic struggle from Babylon through various cultures' golden ages across the globe through three thousand years, including the advent and development of quantitative symbols as integral components of his larger quest. Who ,what, where, when, and why have humans desired a calendar? And what took so long to get the one we use today? After all, millennia ago the Egyptians had their year at about 365.25 days. Caesar made that model a Roman standard long before Christ was born. The Roman Emperor Constantine made it Vatican law in 325 AD. A year, however, is only 365.242199 days long (about, today). That's only a bit shy of 365.25, but the bits added up. By the 1500s AD, the spring equinox was happening on March 11, even though the law said it happened on the 21st. The 365.25 day model of the year was slipping against the true seasons.

In the 1570s, an unlikely Italian hero named Aloysius Lilius, a medical doctor by trade, devised an elegant fix for this mismatch between model (calendar) and modeled (solar cycle). First, he pointed to centennial years and their easy divisibility check (end with two zeros). Since the 365.25 day model adds too much by about .01 days per year, simply don't add that leap day once every hundred years--do it on centennial years for simplicity and consistency. This gives a better model, but wait, it would swing the slippage the other direction, since the 365.25 actually misses reality by only 0.007801 days, not a full hundredth. It took the development of base-ten place-value and decimals, which occurred in India and Arabia during Europe's Dark Age, before such numeric relationships became apparent.

By adding one more simple stipulation, Lilius derived the formula for a calendar year that actually does keep the spring equinox on March 21 (or 20). The formula says: intercalate a day (insert a leap day) in any year divisible by 4; unless the year is also divisible by 100, then don't; unless it is also divisible by 400, then do. That's it; a three-part function with integral domain and two-element range. Tradition has that intercalated day labeled February 29. So, in the year 1900, February had only 28 days (divisible by four and one-hundred but not by four-hundred equals no leap day); in the year 2000, February was 29 days long (yes yes yes equals leap day). All other years follow Caesar's take on the Egyptian leap rule: Intercalate a leap day every fourth year, now in years with numbers divisible by four, in an otherwise 365-day calendar year.

So, who cares that the spring equinox falls on March 21st? In Western Civilization, throughout the dark ages, the Roman Church secretly maintained the study of astronomy (and so mathematics) because it used a function to determine the date to celebrate Easter each year. Their formula used March 21 as its initial condition, its anchor value, its $x = 0$; Constantine's law was supposed to have made that date equivalent to spring equinox. The sun and earth hadn't obeyed. Europeans died in religious wars over the correct day to celebrate the Ascension. Was it about March 21, or was it about the spring equinox; how could they be different? All this became trouble just because the cycle we call a day and the cycle we call a year, are incommensurable measures! While the popular constant model may have been close enough in the short run, it failed in the long run.

Do you know the formula for Easter? It is so mathematical it even comes with a stated exception (you still can't divide by zero ... until you meet Newton, then only sometimes). Hebrew scribes back in the years near what we call 0001 used a lunar calendar to date the crucifixion. Constantine only knew Caesar's solar model, so the Gregorian-date stayed unsure. To translate between the two calendars--each based on a different observable natural cycle--we have the rule: Easter always falls on the first Sunday after the first full moon after the spring equinox; unless that is also Passover, in which case ... This makes Easter a "floating holiday" in our solar calendar, like our Thanksgiving, unlike "fixed holidays" with set dates, such as Christmas and the Fourth of July.

In early March I asked my Math 210 students "where is the moon now?" Almost half full and waxing, they informed me. As a class exercise, without accessing any other resources, they then used their new knowledge of cycles to predict the date of the coming full moon and the next. Knowing that the equinox indeed occurs on March 21, and that 2010 isn't nicely divisible by 4, they were able to determine this year's date for Easter. Sure enough, it checked against the answer key in everybody's planner.

"I always just looked on the calendar. Some years I wondered why (Easter) was so late." My students seem to embrace this elegant yet simple function from our calendar. True, predicting the relationship between the moon cycles and solar cycles maybe isn't so simple, though a dependable nineteen year cycle has been noticed by several cultures throughout history. I recently learned that certain walls in the Chaco Canyon complex are aligned to mark extreme points, in that nineteen year lunar cycle, of the moon's position in the sky as it rises on a certain day each year. Meanwhile, moon shadows falling on spirals drawn on particular walls at Chaco seem to mark where, in that 19 year cycle, we are today!

More than one student asked: Is this all connected to the farming tradition of not planting your potatoes until the Friday before Easter? I replied by asking: Did the farmers let the church do the computing--on both solar and lunar cycles--to mark the dependable onset of spring? And, calendar-printers dependably pass the info around, in a form accessible to all!

Today, observation has become so precise that scientists intercalate nanoseconds into the model. Events such as large earthquakes cause incredible masses to move across the earth's surface. These events have measurably, however momentarily/singularly, altered the time (now, number of cycles of cesium radiation) in the unit of measure we call a day (one time around Earth's axis of rotation). Still, rest assured, Aloysius' model, now called the Gregorian calendar, will keep the equinox on March 21 (or 20) for millennia to come.

New Mexico Mathematical Association of Two-Year Colleges

Indeed, the roles of mathematics in the development and maintenance of civilization run deep in nearly all cultures on earth, from practical realms to religious. Still, some folks, especially those liberal arts types, are happy to let other folks "do the math." They seem even happier to do so after learning how much math it took to get our civilization where it is today. (They too love their cell phones, antennae in the shape of fractals!) It took three thousand years and incredible intercultural exchange of knowledge and innovation, regarding both observation of nature (the scientific method) and representation of that knowledge (mathematics), just to refine accurately a simple mathematical model like our calendar.

"Mathematics and its role in the development and maintenance of civilization. Prerequisites: Credit for ENGL 111G or eligibility to enroll in ENGL 111H, high school algebra and an adequate score on the Mathematics Placement Examination (or a C or better in CCDM 114N)." From NMSU Grants Course Catalog 2008 - 2010, pg. 81.

Robert N. Baker
New Mexico State University-Grants
rnbaker@nmsu.edu

Mr. Baker enjoying the Great Wall of China at the 1999 American Mathematics Education Ambassador Tour to the People's Republic of China..

New Mexico Mathematical Association of Two-Year Colleges

StatWay and MathWay

By Joanne Peeples

AMATYC, the Charles A. Dana Center at The University of Texas at Austin and the Carnegie Foundation for the Advancement of Teaching have joined together with an initiative to strengthen the pathways through mathematics for community college students. At the current time two components are in full swing – and pilot courses are planned for each of them at community colleges across the nation.

The StatWay component will create a pathway through Statistics for non-STEM students. StatWay will be a one-year course that will take the student from beginning algebra (algebra concepts will be introduced "just-in-time") through a credit level Statistics course. It is intended to accelerate the student's progress through their math requirement, and to provide the algebraic and numeracy concepts necessary for success. El Paso Community College will be piloting one of these courses in the fall 2011, along with eighteen other community colleges across the nation.

The MathWay course is a one semester course (the prerequisite will be prealgebra), and will prepare students to take a college-level non-STEM course in mathematics. The course will integrate numeracy, proportional reasoning, algebraic reasoning and the understanding of functions. This integration will be facilitated through the use of rich problems, building mathematical concepts within the problems. The goal is to build algebraic reasoning, not just fluency in algebraic manipulation. I have worked on the structure of this course, as the MAA representative on the committee. Individual lessons are being tested this year, and about twenty community colleges will pilot MathWay in the fall of 2011.

These initiatives will affect mathematics departments at both community colleges and universities, and we, in the mathematics community, should be aware of these changes.

Joanne Peeples
El Paso Community College
joannep@epcc.edu

New Mexico Mathematical Association of Two-Year Colleges

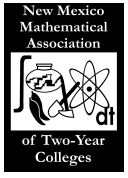
Developmental Mathematics: At the Margins of Education

By German A. Moreno

Those of us who teach students at the developmental level know that we teach at what may be thought of at the margins of education. Students come to us with histories, many of which are painful when they consider their educational experiences in a system often not matched to their lives, desires and possibilities—I often question whether my response to them is adequate. We are challenged as mathematics educators to consider this disconnect between students originalities and educational systems (in particular the public school) so driven to create standardized mathematics curricula as well as standardized students.

It is often difficult to discuss the possibility that mathematics ought not to be taught as a linear process building on itself like an edifice. This is our training and it is difficult to think about other possibilities. I would like to call us back to those things that called us to the discipline of mathematics, those individual or collectives spaces where we learned a fact or theorem that held us there suspended in time wondering whether we could continue discovering anew mathematics that made our imaginary worlds fanciful. How often are we structured by mathematics textbooks mimicking a curriculum that already failed to capture the interest of our students, forgetful of these moments?

I have recently become interested in Art Education philosopher Maxine Green who reminds us that "even in the small…spaces in which teaching is done, educators may begin creating the kinds of situations where…students will begin telling the stories of what they are seeking…exchanging stories with others grounded in other landscapes, at once bringing something into being that is in-between (1993, p. 218). I believe that when we gather with our students we should work toward creating these spaces somehow reminding ourselves of the things that drew us into education and that drew us to mathematics. Where do these two things coincide? For me I know that they do not coincide in the exercise sets and computerized programs we often sell to our students. I must admit that even knowing this I have not fully relinquished my use of these easily accessible tools which often grade for me or give me easy to print out exams. I am still seeking a way to exchange with my students the real stories of what drew me into teaching mathematics—in hopes that they will share theirs about what they wish to get out of my classes.



As a developmental mathematics educator, I know that often the last thing on the minds of my students is an interest in real mathematics. Perhaps this is because they have not been too successful in school; perhaps it is because they've been away from school for too many years. Or perhaps it's because I have failed to create opportunities to discuss real mathematics, as a live and human activity. I wait for the day when my abilities as a teacher directly meet the needs that my students have when they arrive at my door; and in the meantime I will hope that the few things that I do to break away from standardized textbooks and exams will be a small opportunity for them to break away from the margins of education.

German A. Moreno
Dona Ana Community College
gmoreno@nmsu.edu

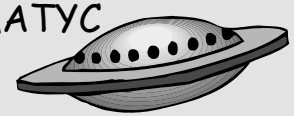
Honoring One of Our Own

Do you work with a colleague whom you consider to be a master teacher; someone who inspires you, their students and fellow faculty? Each year, NMMATYC honors a member of our organization by awarding the David Lovelock Teaching Excellence Award to an outstanding contributor to mathematics education at the two-year college level. Please consider nominating a colleague (or self nominate) by submitting the short application available at www.nmmatyc.org by the April 1st, 2011 deadline. The recipient of the award will be honored at the NMMATYC Conference in May and will receive a one-year AMATYC membership and a plaque. For additional information, please contact Mary Caffey, NMMATYC Nominating Committee Chair, at mary.caffey@clovis.edu.

Constitution and By-Laws Changes

In September, the NMMATYC membership voted to change the Constitution and By-Laws to include a Webmaster, appointed by the President, as a member of the Executive Board. The Webmaster is responsible for the update and maintenance of the Association's website, www.nmmatyc.org. The vote also authorized electronic ballots as an alternative to mailed ballots. All of the twenty-eight members who returned ballots voted in favor of the changes. (Submitted by Mary Caffey, NMMATYC Nominations Committee Chair, Clovis Community College)

Joint Conference of the Southwest Section of the MAA and NMMATYC



When: May 20-21,2011

Where: Eastern New Mexico University in Roswell, NM

Conference chair: Janet Macaluso

Registration, Presentation, and Hotel Information: Coming Soon!

Check out NMMATYC's new website!

http://nm.matyc.org

This is a work in progress; continue to check for new updates.

Statewide Developmental Education Alignment Meeting

When: December 3, 2010

Where: Max Salazar Building, Central New Mexico Community College

Contact: Lucy Gurrola (lgurrola@nmsu.edu) for more info.

New Mexico Mathematical Association of Two-Year Colleges

NMMATYC AWARD WINNERS
GALLUP, NM
MAY 2010

From top to bottom:
Ignacio Sandoval
Joanne Ortiz
Liliana Acosta
Alan Mabry (accepting award for Paul Mason)
Awards presented by Joanne Peeples

Theresa Klein , winner of the Michelle Jimenez Scholarship, posing with University of New Mexico at Valencia faculty members.

Other Upcoming Conferences

AMATYC 36th Annual Conference
November 11—14, 2010
Boston, MA

AMATYC 37th Annual Conference
November 10-13, 2011
Austin, Texas
Website: http://www.amatyc.org

NADE 35th Annual Conference
February 23-26, 2011
Washington, D. C
Website: http://www.nade.net

NCTM 2011 Annual Meeting and Exposition
April 13-16, 2011
Indianapolis, Indiana
Website: http://www.nctm.org

Editor's Corner: Now That's Dedication!

As a fellow educator, you probably sometimes feel my frustrations in the level of dedication that some students show to their studies. Something happened yesterday that was a wonderful reminder of the gems we do have in our classrooms that definitely should not be overlooked.

I work at a remote campus of Dona Ana Community College, located in Anthony, NM. There is a great deal of land mass surrounding the campus, which is why it was not too far – fetched when I began to hear rumors floating about the campus that a plane had crashed close to a nearby small highway. By 1:00 pm, the campus became completely shut off by the state police from every direction possible due to this crash. Or so I thought. I have an algebra class that was supposed to begin at 1:30 pm, so I decided to go to my classroom and wait for any students that might already have gotten onto campus before the accident. My students had an important assignment due that day, so when they were unable to get into the campus, the phone at the front office began ringing, mostly my students wondering if the class had been canceled. This I expected, after all, students want to show they really were on their way to campus, but simply were not allowed to enter.

This I did not expect, however. A few minutes after class supposed to begin, one of my students flies through the door, project in hand. She commences to explain that when the police would not let her into the campus, she went back to her house, and got her husband to bring her to campus via a back road on his four wheeling vehicle! She was not going to take any chances not getting her assignment in on time. I am so happy to say, there are still students out there that show us true levels of dedication! *Side note: The Las Cruces Sun News reported the following day: Three people were flying in the plane, and all survived the impact."*

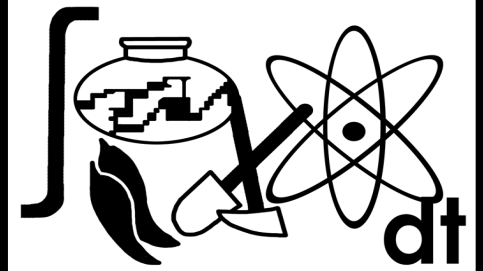
Math Jokes

Q: "What do you get when you divide the circumference of a pumpkin by its diameter?"
A: "Pumpkin Pi!"

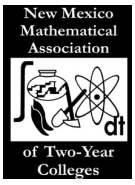
A mathematician was helping his teenage daughter with her trigonometry homework. Father: "What is the sine of 45?" Daughter: "Over the hill?"

"There's three kinds of mathematicians. Those that can add, and those that can't."

New Mexico Mathematical Association



of Two-Year Colleges



Suzanne Hill

NMMATYC Newsletter Editor
Dona Ana Community College
3400 South Espina
Las Cruces, New Mexico 88003