California Mathematics Council Community Colleges

The 21st Annual Recreational Mathematics Conference at Lake Tahoe

By Larry Green, Lake Tahoe Community College

CMC[3] will host the 21st annual Recreational Mathematics Conference on Friday and Saturday, April 21 and April 22, 2017. Last year we surveyed the membership and there was an overwhelming request to move the conference from a casino to Lake Tahoe

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Community College. We have listened to your requests and the conference will be held at the college for the first time this year. Because of this, we are able to reduce the registration cost by almost **half**: only $70 for CMC[3] members.

The college is in a smoke-free environment and is situated in the middle of the forest next to a pristine meadow with a charming meandering creek. We have secured a large block of rooms at the **Beach Retreat and Lodge,** which is just about one mile from the college.   The Beach Retreat and Lodge sits right on the shore of Lake Tahoe and is an ideal place to enjoy the Jewel of the Sierras. This conference is unique in that all of the talks are recreational in nature, focusing on applications and other mysteries of mathematics.

We are particularly excited about our keynote speakers this year. The conference begins at 7:00 pm on Friday, April 21, with an opening get-together. Then Rick Luttmann from Sonoma State University will explain how to use game theory to become a Battleship Game master. Then on Saturday, we are delighted to announce that John Callas, the director of the Mars Rover projects for JPL and a math instructor at Pasadena City College, will present on how his team is using mathematics to explore Mars and the rest of the universe.

Also on the program are a dozen other talks filled with amazing uses, facts, and problems from recreational mathematics. Saturday will also feature a catered lunch followed by an outdoor geocaching contest for those who want to explore the surrounding beauty.

The grand finale of the conference will be this year's **student** keynote presenter. If you have a

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Conference AV Specialists: Larry Green, Lake Tahoe Community College (530) 541-4660 ext. drlarrygreen@gmail.com and Steve Blasberg, West Valley College (408) 741-2564, steve_blasberg@westvalley.edu

Fall Conference Chair: Katia Fuchs, City College of San Francsico, (415) 452-5395, efuchs@ccsf.edu

Foundation President: James Sullivan, Sierra College, (916) 660-7973, jsullivan@sierracollege.edu

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Membership Chair: Kevin Brewer, Solano Community College, (707) 864-7000 ext. 4396, kevin.brewer@solano.edu

Newsletter Editor: Jay Lehmann, College of San Mateo, (650) 863-5305, MathNerdJay@aol.com

Spring Conference Chair: Larry Green, Lake Tahoe Community College, (530) 541-4660 ext. 341, drlarrygreen@gmail.com

Student Poster Session: Jen Carlin-Goldberg, Santa Rosa Junior College (707) 527-4746, jcarlingoldberg@santarosa.edu

Spring Program Chair: Mark Harbison, Sacramento City College (916) 475-9461, harbism@scc.losrios.edu

Web Page Coordinator: Larry Green, Lake Tahoe Community College, (530) 541-4660 ext. 341, drlarrygreen@gmail.com

Mark Your Calendar:

45th Annual CMC³ Conference

December 8th and 9th, 2017

Hyatt Regency Monterey Hotel and Spa

Tahoe Conference
(continued from front cover page)

student who may be interested in being this year's Tahoe Student Speaker, please encourage them to apply. The committee will begin reviewing the applications on March 1. Students can apply online at: www.cmc3.org/conference/ callForStudentProposal.html.

On Friday evening after Luttmann's presentation, the CMC³ Foundation will be hosting its fourth annual conference gala, so be prepared for tasty morsels, amazing networking with other community college mathematics professors and a chance to help raise scholarship money for our students. This year, you can register either online or with a traditional paper registration form. Registration will include a catered lunch. Full-time students may register for a nominal fee of $5 that does not include the catered lunch.

For more information, contact your CMC³ campus representative or Larry Green, Tahoe Conference Program Chair, at DrLarryGreen@gmail.com. For the latest information and details about the conference and for the registration form, please visit the CMC³ website at www.cmc3.org.

CMC³ History Quiz, Part 8
Mark Harbison, Sacramento City College

1. Rearrange the letters "Ya Nerd Me" to spell the first and last names of the 2016 Monterey Keynote:

    — — —   — — — — —

2. In what year was the first annual "Game Night" reception sponsored by Pearson Education?

3. How many of the ten people in the 1976 CMC³ Monterey program can you name?

4. Which hotel hosted the CMC³ Monterey conferences from 1989 to 1995?

5. Which college will host the upcoming 2017 CMC³ Recreational Mathematics Conference?

President's Report

Joe Conrad, CMC³ President, Solano Community College

Thank you to everyone who contributed to making the 2016 Monterey conference one of the best conferences we have ever had! Thanks to all the speakers who shared their insights with us. The program had a wide variety of regular session talks and two superb keynote addresses that gave us much to consider. Also, thanks to those who helped run the conference whether that be presiders, board members who did a huge amount of work or hotel staff who ensured a smoothly-run conference. It takes many people to put on a successful conference. Special thanks to the conference char, Katia Fuchs, who did an amazing job putting it all together! She has already started planning the next Monterey conference. Please consider giving a talk. The proposal form is available on our website at: http://www.cmc3.org/conference/callForProposalsMonterey.html.

This past conference was also the first with online registration. The hard work of Larry Green, Kevin Brewer and Leslie Banta produced something that was used by the vast majority of attendees, and we plan to continue this option in the future, including the Tahoe conference in April.

Speaking of the Tahoe conference, there are more details elsewhere in this newsletter, but I wanted to underscore the fact that **we moved the location to Lake Tahoe Community College** because of your overwhelming response to our survey last winter about the location. We are hoping that we will see many new faces at Tahoe this year due to the California location that is also smoke-free. It's only a short drive to the casinos, so those who still want to partake of their offerings will be able to visit them with ease.

Finally, next fall we will be holding the next round of elections for CMC³ board members. I strongly encourage everyone to consider joining our board. In addition to the conferences, we meet two other times during the year (September and January) at one of our campuses to plan the conferences and discuss other concerns related to our mission to promote community college mathematics education. If you want more information or just want to talk about it, please contact me or Past-president Mark Harbison who will be running the election, or any one of the current board members. (Our contact information is listed on page 2.)

Thank you all for your participation in CMC³! Your students thank you as well!

> Anyone is welcome to attend our board meetings. If you'd like to attend, please contact anyone on the board. We'll be happy to tell you the date and location of our next meeting.

Math Nerd Musings: Riding the Wave

Jay Lehmann, Newsletter Editor, College of San Mateo

In past columns, I've shared my experience in facilitating collaborative learning, which has largely been exciting and productive, although not without its challenges and disappointments.

Before having teams embark on challenging and unfamiliar problems, I often lecture for the first 20 minutes. Whenever possible, I try to present problems in which we have not discussed an algorithm and have students shout out suggestions of what do in each step.

For example, in my second-semester calculus class, I presented students with an integral of sine squared times cosine squared. Over the course of the next twenty minutes, students suggested not one but four ways to integrate (using various trig identities). It was exhilarating to ride the wave of their suggestions, drawing arrows this way and that, as students would abandon one path and have me back up to use a more efficient tactic. The work filled the board and to erase any of it before we'd discovered the four paths felt akin to erasing a portion of a painting; all the work needed to be displayed at the same time so we could compare and contrast the efficiency and elegance of each approach. But the lack of space lead to more and more disorganized board work.

Later that day, I had to ask myself the difficult question: had the twenty-minute investigation been worth it?

On the one hand, I loved the experience. This is what mathematics truly is, right? We go in a certain direction, back up, more forward, rinse and repeat. Also, I loved the community aspect. As each student suggested a new path, I found myself referring to the path using the name of the student who'd suggested the technique. In addition, I marvel at the fact that right when we started, a student had asked how we should go about deciding which trig identity to use when there are multiple valid choices. I said we'd put his question on ice and once we had the four solutions on the board, we put to a vote which method was "best." I then responded to the student's question by saying we determine which identify to reach for by considering multiple paths and comparing their efficiencies. Probably not the answer he was expecting (or possibly wanting), but hopefully it was a teachable moment for all.

Finally, there was the added benefit of demonstrating that there can be more than one way to solve a problem.

On the other hand, I had to wonder how many students had tracked what we'd been up to. Not only was my board work more shoddy, we'd stopped short of completing the four paths. And perhaps most second-semester-calculus students are already hip to the fact that many math problems can be solved in more than one way. Finally, there's the spirit-crushing pressure of coverage. By spending so much time on the exploration, I'd "robbed" students of a discussion about how to handle products of powers of tangent and secant.

The counterargument to the content issue is that for the most part students won't need to use techniques of integration by hand in their careers but they will have to problem solve.

Perhaps the most salient point is that *I* enjoyed riding the wave. After all, what could be more honest and motivating than unveiling our passion for teaching and performing mathematics?

> What could be more honest and motivating than unveiling our passion for teaching and performing mathematics?

2016 Monterey Conference Wrap-Up and Look Ahead

Katia Fuchs, President Elect, City College of San Francisco

The 44th annual CMC³ Fall Conference was held on Friday December 9 and Saturday December 10, 2016, at the Hyatt Regency Monterey Hotel and Spa. We had a truly fantastic program, with a hearty attendance of 303 people, a record in recent history! For the first time ever we offered online registration, and it enjoyed great popularity!

Our Friday Keynote, Spiros Michalakis, talked about quantum entanglement and premiered an exciting sequel to a popular YouTube video in which Paul Rudd and Stephen Hawking play a game of quantum chess. Our Saturday Keynote, Dan Meyer of Desmos, gave a rousing and engaging talk about the use of internet-based technology in teaching that was very well-received. Many of the regular sessions were standing-room-only, and many talks received extremely positive feedback. We would like to extend our most sincere thanks to our many presenters and presiders.

This was our fourth conference at the Hyatt Regency, and like last year, all of our breakout sessions were held on the main level of the conference center. The weather had us a little worried when it came to setting up lunch, but fortunately the rain held off, and we were able to set up the buffet outside as originally planned.

Like in years past, we offered a shuttle running from the Hyatt hotel to downtown Monterey, but only on Saturday this time, as the Friday night shuttle was not in high demand. Due to construction at the Portola hotel, the drop-off for the shuttle was different than in prior years, but we are told that once construction is completed the drop-off will return to its central location. The demand for the shuttle was so great that we are considering running more shuttles next year to accommodate everyone who wanted to take advantage of the service.

We are already starting to plan for next year's conference, which will take place December 8th and 9th, 2017. The conference will launch on Friday evening with a keynote speaker. We will offer our usual strands of topics, with special interest in new speakers, speakers sharing innovative teaching practices, and speakers who can serve as a bridge between the K-12 and Community College systems.

If you are even a little bit interested in speaking, please check out the speaker proposal form: www.cmc3.org/conference/callForProposalsMonterey.html. We are looking forward to seeing what you have all been working on and hearing you speak!

Hoping to see you all in Monterey in December and at our new location in Tahoe on April 21-22, 2017!

The Pleasures of Problems

Kevin Olwell, San Joaquin Delta

Spring 2017: Treat Earth as a perfect sphere with a radius of 4000 miles. Imagine a wire encircling Earth at the equator at a uniform height 1 foot above the ground. Although the wire is only 2π feet longer than the equator, if you pull the wire taut, it's surprising how far above the ground the wire reaches. An exact answer is not possible. However if you think like a physicist you can estimate the height to within .1 inches. Find a formula to estimate the height. How far above the ground is the highest point?

Fall 2016: Winnie the Pooh and Piglet go to visit each other. They leave at the same time and each walks at a steady pace. Because they are preoccupied counting the blackbirds flying overhead, they pass by each other without realizing it. Pooh gets to Piglet's house 1 minute after they pass while it takes Piglet another 4 minutes to get to Pooh's house. How long did it take Piglet to get to Pooh's house?

Solutions were submitted by Tom Grube, Carlos Valencia, Fred Teti, Joe Conrad, Carlos Osco, and Joel Siegel.

Let w = Winnie the Pooh's walking speed, p = Piglet's speed, D_w = distance from Pooh's place to where they pass each other, D_p = distance from Piglet's house to where they pass, and t = the time from when each leaves home until they pass. Then

$$D_w = wt = 4p \qquad D_p = pt = w .$$

$$\rightarrow \quad pt^2 = wt = 4p \quad \rightarrow \quad t = 2.$$

Some readers interpreted the phrase "another 4 minutes to get to Pooh's house" to mean that Piglet arrives at Pooh's house 4 minutes after Pooh gets to Piglet's, or 5 minutes after they pass. This changes the first equation to $D_w = wt = 5p$, and the time until they pass each other to $t = \sqrt{5}$.

All are invited to submit a solution to the Spring 2017 problem either via email or US mail at the address below.

Kevin Olwell
San Joaquin Delta Community College
Agriculture, Science and Math Division
5151 Pacific Avenue
Stockton, CA 95207
kolwell@deltacollege.edu

Please consider putting one or two newsletters in the copy room for other instructors to read.

What's Happening at City College of San Francisco

Ekaterina Fuchs

In January of 2017 the ACCJC met to decide the fate of the college, and, breaking all precedent, announced immediately after the meeting that CCSF is now in full compliance, re-affirming the college's full accreditation for seven years without any condition. This ended a stressful period rife with uncertainty at the College.

In July of 2012, the City College of San Francisco (CCSF) was placed in "show cause" status by the Accrediting Commission for Community and Junior Colleges (ACCJC), indicating that the institution was in "Substantial non-compliance" with the commission's eligibility requirements. A year later, on July 3, 2013, the ACCJC shocked the college community by announcing that it would revoke the College's accreditation in 2014.

The devastating news affected every aspect of college life. From faculty suddenly terrified of losing their livelihoods, to students running in panic away from the college for fear that the classes they would take there would count for nothing, the months and years following the fateful announcement would mark a dark time.

The college filed for appeals of the ACCJC's decision. This was a long and arduous process, and the appeals were ultimately denied.

At the same time that uncertainty loomed overhead, the college received overwhelming support from the city of San Francisco. From mayor Ed Lee speaking to the importance of CCSF, to the lawsuits brought against the ACCJC by the City Attorney of San Francisco, everyone rallied around saving CCSF.

In January of 2014, Judge Karnow of the Superior Court of San Francisco ruled that the college couldn't lose its accreditation until the resolution of the lawsuit between ACCJC and the City Attorney's office. During the course of the lawsuit, ACCJC introduced "restoration status" which would give a college in CCSF's position two years to come in compliance with regulations. In a subsequent announcement in January 2015, ACCJC decided to grant CCSF this newly developed restoration status (CCSF was the first and only college to ever be placed on that status).

For the next nearly two years, CCSF set to work preparing a self-evaluation report demonstrating compliance with all accreditation requirements, and in October 2016 a new visiting team came to the college to assess progress.

The uncertainty of the past four years took a great toll on CCSF enrollment. Since the summer of 2014, college enrollment has tumbled nearly 40%.

Mathematics department enrollment, while also taking a huge hit, is currently on the rebound, with Spring 2017 enrollments up 4% from Spring 2016.

The Mathematics department is excited to move forward after hiring two new full-time faculty members for Fall 2016, and is looking to hire two more for Fall 2017.

What's Happening at San Joaquin Delta College

Jackie Schwegel

In January 2014, the math and science faculty moved into our new Science and Mathematics Building. In addition to the obvious joys of working in a clean, modern space (where every faculty office has a window!), the move brought other positive changes. For the first time in over a decade, all math and science faculty offices are now in the same building allowing for easier casual collaboration. The new building has a 60-seat math computer lab allowing us to increase the number of computer-enhanced courses we offer and providing a better working environment for courses such as differential equations, which has a required computer lab component. Also, every classroom in the new building is a smart room allowing faculty greater access to a wider array of teaching tools during many classes.

In the fall of 2015, we began offering two different algebra pathways; one for STEM majors and others needing a thorough and

rigorous algebra foundation and another pathway for liberal arts majors. The latter course focuses on fundamental algebra skills, applications of

functions and uses the graphing calculator to more easily explore real-world models. Beginning in the fall of 2017, we will also offer a third option for our CTE students and others not planning to transfer to 4-year schools. This terminal course, titled 'Applied Mathematical Concepts for the Associates Degree', focuses

even more on real-world applications and our CTE faculty are very excited for their students to have this course as an option.

Thanks to SEP, SSSP & BSI funding and a Basic Skills Transformation grant, we are piloting and implementing a number of programs to assist and support students in math courses below transfer level. We offer a modified supplemental instruction program in some of our lowest level classes. We are in our second year of offering skill-specific math workshops throughout each semester. We are working with our first cohort of students taking both beginning and intermediate algebra (non-STEM) in one semester as an accelerated pathway to statistics and transfer. We piloted a free, 1-week boot camp the week before fall semester that was open to all students entering beginning algebra. And, in fall 2017, we will pilot our first sections of beginning algebra with a co-requisite lab,

CMC³ Foundation Report

James Sullivan, Foundation President, Sierra College

As the newly appointed President of the CMC³ Foundation, I look forward to working with the marvelous members of the CMC³ Foundation Board (Leslie Banta, Mark Harbison, Shawn Lanier, and Casey Terrill) to conduct fund-raising events and solicit donations in order to award scholarships and prizes to qualified and deserving California Community College students in our service region who demonstrate promise and interest in the area of Mathematics and Mathematics Education. I would also like to offer my sincere thanks to the irreplaceable Mark Harbison of Sacramento City College. Mark wears several hats in his service to CMC³. In 2016, he took on the added responsibility of leading the CMC³ Foundation when the entire Board was newly elected to their positions. Mark mentored and guided us through our first year of service on the Foundation Board. I am grateful for his invaluable guidance and support in preparing us for the year ahead.

And the Award goes to …

The CMC³ Foundation sponsors the Student Poster Contest held during the Annual Fall Conference in Monterey. In 2016, several students participated in the Student Poster Contest, and the Foundation Board was impressed with the quality of their entries. After the presentation and judging sessions took place, it was announced at the conference luncheon that Christian Eckert, Mark McCullough, and JC Stephens from Lake Tahoe Community College received a $125 award for 1st place, Mark Delarosa from Solano College received a $75 award for 2nd place, and Hunter Martin and Gabriel Fredericks from Solano College each received a $50 award for a 3rd place tie. The Foundation Board offers its congratulations to the 2016 Student Poster Contest award recipients and appreciation to each of the student participants and their faculty advisors for contributing to the success of the Student Poster Contest. The Foundation Board also offers its gratitude to our generous members whose donations make the monetary awards for the Student Poster Contest possible.

Also, at the Monterey Conference luncheon, former CMC³ Foundation President and longtime CMC³ Board member Debbie Van Sickle of Sacramento City College was presented with the 2016 CMC³ Distinguished Service Award. The Foundation Board would like to acknowledge and thank Debbie Van Sickle for her many years of service, dedication, and commitment to the CMC³ Foundation. Her leadership, efforts, and contributions over the years on behalf of the CMC³ Foundation have benefited numerous California Community College students. Debbie's presence on the CMC³ Foundation Board will be truly missed.

2017 CMC³ Scholarships Available

The CMC³ Foundation is pleased to announce the offering of $6000 in total scholarship funds available to qualified and deserving mathematics students. We encourage you to share this scholarship opportunity with worthy students. Students eligible for nomination must have successfully completed a minimum of 30 college units, including at least 8 units at a CMC³ member college, are currently enrolled in a minimum of 6 units at a CMC³ member college, and have completed at least one mathematics course at the level of second semester engineering calculus or higher. Application packets must be completed and submitted by March 15, 2017. Application materials and instructions can be downloaded from the CMC³ Foundation webpage http://www.cmc3.org/foundation.html .

CMC³ Foundation scholarships are made possible through generous donations from our members like you. Please consider supporting our scholarship fund this year by making a tax deductible cash donation either by credit card or PayPal using the "Donate" button on the CMC³ Foundation webpage or by mailing a check to Leslie Banta, CMC³ Treasurer, Mendocino Community College, 1000 Hensley Creek Rd, Ukiah, CA 95482. You can also support our scholarship fund by attending the Gala Fundraiser at the Spring Recreational Mathematics Conference held at Lake Tahoe Community College on April 21, 2017.

San Joaquin College

which will provide an accelerated pathway for students who place in Pre-Algebra. With an overwhelming majority of our students placing at or below Beginning Algebra, we are excited to have so many programs to support and accelerate them on their academic path.

Thanks to a project initially funded by an HSI STEM grant and continuing support from our college, we have a thriving supplemental instruction (SI) program which supports our STEM students in transfer-level math and science classes. Many of these students are also active in our wonderful MESA program. Through MESA many students find, apply for, and receive internships (many paid!) all across the country. And, of course, our students participate in the AMATYC student competition. Through generous donors and the support of the college, we are able to offer scholarship money to our highest scorers each year.

We have hired four new math faculty since the fall of 2014 and we anticipate another new entitlement for the 2017-18 school year. Also, we anticipate doubling the number of full-time math faculty at our Mountain House South Campus (from one to two). As you can see, there is a lot going on here in at San Joaquin Delta College. Keep an eye open for future job openings if you would like to be part of our team!

Through the History Glass

J. B. Thoo, Yuba College, `jthoo@yccd.edu`

Have you reached for a book on your bookshelf to search for an interesting or new problem for your class? How about reaching for material from a few hundred years ago—or a few thousand? Here are a few to whet your appetite.

From the Babylonian tablet YBC 4669 [2, p. 86] (ca. 3500–3000 BC).

> I have eaten two thirds of my provisions: there is left 7. What was the original (amount) of my provisions?

And from the tablet AO 6770 [2, p. 86].

> I took a stone: I did not know its weight. I took away 1/7, the third of a shekel and 15 grains. I put back 1/11 of what I had taken and five sixths of a shekel: my stone was restored to its original state. What was the original (weight) of my stone?

From the Chinese text *Jiuzhang Suanshu* (ca. 206 BC–AD 220) [2, p. 93].

> 9 gold coins weigh as much as 11 silver coins. If, in each pile, one gold coin is replaced by a silver coin, and conversely, the gold pile becomes lighter by 13 *liang*. How much do a gold and silver coin weigh respectively?

The answer is given in units of *jin* (roughly, pound), *liang* (roughly, ounce), and *zhu*, where 1 *jin* = 16 *liang* and 1 *liang* = 24 *zhu*.

And another one from *Jiuzhang Suanshu* [2, p. 95].

> Suppose there are two horses, one good and the other poor, who both leave Chang'an to travel to Qi. The distance from Chang'an to Qi is 3000 *li*. The good horse goes 193 *li* the first day and increases the distance he travels by 13 *li* on every succeeding day. The poor horse goes 97 *li* on the first day and every day thereafter the distance he travels reduces by half a *li*. The good horse arrives at Qi first and then retraces his journey to meet the poor horse. How many days will have elapsed until they meet, and how far will each horse have traveled?

One *li* is about one-third mile.

From the Indian text *Víja-gańita* by Bhāskara II (1114–1185) [1, p. 212].

> The son of PRĬT'HÁ, exasperated in combat, shot a quiver of arrows to slay CARŃA. With half his arrows he parried those of this antagonist; with four times the square-root of the quiverful, he killed his horse; with six arrows he slew ŚALYA; with three he demolished the umbrella, standard and bow; and with one he cut off the head of the foe. How many were the arrows, which ARJUNA let fly?

From Leonardo of Pisa's (Fibonacci's) *Liber abaci* (1202) [4, p. 58].

> [On Five Men Who Bought a Horse] Five men having bezants wished to buy a horse; the first man takes from the second half of his bezants, and the second takes from the third a third, and the third takes from the fourth one fourth, and the fourth takes from the fifth one fifth, and the fifth similarly takes from the first one sixth of his bezants. It is sought how many bezants each of them had, and what was the price of the horse.. . .

From Daboll's *Schoolmaster's Assistant*, a nineteenth-century American textbook [3, p. 203].

A laborer was hired 60 days upon this condition; that for every day he wrought he should receive 4s. and for every day he was idle should forfeit 2s.; at the expiration of the time he received 7*l*. 10s.; how many days did he work, and how many was he idle?

Note that there are 20s. (shillings) in 1*l*. (pound).

We have given only a few examples. There is a treasure trove of problems out there to stretch your imagination. Finding them will be like panning for gold: with some diligence and patience, you will find problems that are, well, worth their weight in gold. We hope that you strike it rich!

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Previous columns are on the Web at `<http://ms.yccd.edu/history-glass.aspx>`. Thoo is coauthor with Amy Shell-Gellasch of *Algebra in Context: Introductory Algebra from Origins to Applications*, Johns Hopkins University Press, Baltimore (2015), that presents introductory algebra using history as the vehicle.

References

[1] Brahmagupta and Bhāskara, *Algebra, with Arithmetic and Mensuration, from he Sanscrĭt of Brahmagupta and Bhascara*, John Murray, London (1817). Translated by Henry Thomas Colebrooke, Esq.

[2] Jean-Luc Chabert (editor) et al., *A History of Algorithms: From the Pebble to the Microchip*, Springer-Verlag, Berlin (1999). Translator of the English Editor: Chris Weeks.

[3] Nathan Daboll, *Daboll's Schoolmaster's Assistant: Improved and Enlarged, Being a Plain Practical System of Arithmetic Adapted to the Unites States*, E. &E. Hosford, Albany (1825).

[4] Leonardo of Pisa (Fibonacci), *Fibonacci's Liber Abaci: A Translation into Modern English of Leonardo Pisano's Book of Calculation*, Springer, New York (2002). Translated L. E. Sigler.

Answers to CMC³ History Quiz
(continued from page 3)

1. **Dan Meyer** was the 2016 Monterey Keynote speaker.

2. CMC³ is grateful for Pearson Education's annual sponsorship of Game Night every year since it started in **2009**.

3. In 1976, the 4th annual CMC³ Fall Conference program had 6 regular sessions, 4 panels and 1 keynote, featuring: **G. D. Chakerian** (UC Davis), **Earl Beard** (U. Maine), **Herb Gross** (Bunker Hill CC), **Herb Peckham** (Gavilan C.), **Frank Denney** (Chabot C.), **Karel Deleuuw** and **Phillip Fallace** (Stanford U.), **Rick Luttmann** (CSU Sonoma), **James Stakkerstad** (Cabrillo C.), and **Ray Wuco** (San Joaquin Delta C.).

4. The **Monterey Plaza Hotel** hosted our conferences until 1995 when the limited space became too crowded for attendance over 300 people.

5. The Apr. 21-22, 2017 CMC³ Spring conference will be held at **Lake Tahoe Community College** in South Lake Tahoe, CA. It is the first CMC³ event held at a college since a conference at Chabot College on May 13, 1972.

Calendar

February 25, 2017: Sacramento Valley Community College Math Conference, Yuba College. Website: https://ms.yccd.edu/sacvalleyccm.aspx.

March 3—4, 2017: CMC³ South Conference, Kellogg West Conference Center & Hotel. Contact: Cheryl Vallejo, e-mail: vallejocheryl@hotmail.com

March 10—11, 2017: Central Mathematics Symposium Beyond Buzzwords - Digging Deeper. Website: http://cmc-math.org/cmccentral/

March 9–12, 2017: ICTCM 28th Conference, Chicago, Illinois, http://www.pearsoned.com/events-and-webinars/ictcm/

April 7–9, 2017: 50th Annual NYSMATYC Conference, Syracuse, NY. Contact: Phil Loud. Website: www.nysmatyc.org

April 21–22, 2017: 21st Annual Recreational Mathematics Conference, Lake Tahoe Community College. Contact Larry Green (530) 541-4660 ext. 341,
drlarrygreen@gmail.com

July 8—21, 2017: National Center for Developmental Education "Kellogg Institute," Boone, NC. Apply until filled or before July 1. Website:
https://ncde.appstate.edu/kellogg-institute

November 9–12, 2017: AMATYC Conference, San Diego. Website: https://amatyc.site-ym.com/?2017ConfHome.

December 1—3, 2017: CMC North Conference, Diamond Jubilee: Celebrating 60 Years of Community, Leadership and Innovation in Mathematics, Pacific Grove, CA. Website: http://cmc-math.org/cmc-north/

December 8–9, 2017: CMC³ 44th Annual Conference, Hyatt Regency Monterey Hotel and Spa, Monterey, CA. Contact Katia Fuchs, City College of San Francsico, (510) 325-1616, efuchs@ccsf.edu

Jay Lehmann
Editor
CMC³ Newsletter
MathNerdJay@aol.com