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# The Summation

KANSAS CITY AREA  
TEACHERS OF MATHEMATICS

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SPECIAL  
POINTS OF IN-  
TEREST:

- **NCTM -  
Regional Con-  
ference**

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## Message from our President

**-Alan Gilmore**

**Greetings and Welcome!** I would like to introduce myself as a former Math/ Science Teacher for Middle School High School and most recently a Special Education Math Teacher in High School. I have attended KCATM Conferences for more than a decade, I have presented at KCATM Conferences (especially with regard to Excel Spreadsheets), I love to share with and become inspired by KCATM members, I like doing things from which date is generated and thereby Math is used to analyze, I am quite fond of using the board game *Pente* to motivate student to become adept with Coordinates, Slope, Distance, and Linear Equations (you can read more about *Pente* on pages 2&4 of this issue), and most of all I am humbled and excited to be the current President of KCATM.

I am looking forward to a great m looking forward to a great year significantly beginning by the #NCTMregional Conferences, which KCATM is co-hosting in Kansas City on Nov 1-3, (read more about the conference on pages 5-6). The conference will also be a wonderful opportunity for volunteers to attend for free.



In addition, I am hoping we can increase our KCATM Membership and participation as there are so many great Math Teachers.

So, Greetings and here's to teaching and learning from our colleagues.

Sincerely,

*Alan Gilmore*

# *Pente*—

—Alan Gilmore

“Pente” is an adaptation of the ancient Eastern Game “Go”. It’s played on a 19 x 19 grid. I generally create four quadrants with this grid: the x- and y-axis are the middle lines on the grid. However, in select circumstances (e.g. high-incidence Special Education), I have let the whole (19 x 19) grid be Quadrant I.

Players have Black or White stones. Black plays first winner takes White. The object of the game is to get 5 of your stones in a row (horizontally, vertically, or diagonally). Or, capture five pairs of your opponent’s stones. That is, a player becomes able to place a stone at both ends of his opponent’s paired (side-by-side) stones.

In general, the first play is on the center intersection, the second play is 3 points away or more. Following these two plays, a stone may be played anywhere.

## **Pente Coordinates**

Each player announces the coordinates, dictated by the placement of the origin within the 19 x 19 grid. Both players attend to the placement and the announcement of the coordinates as if they do not match, the opponent has the option – should it be to their advantage – of pointing this out to the errant player and move his stone to where it was announced to be.

Initially, in class, I have the students record all plays in their Math Journals. Lat-

er, it generally is not needed, unless for an assessment.

## **Pente Slope**

The play begins and continues as in Pente, and Pente Coordinates but in Pente Slope the 2<sup>nd</sup> and all subsequent plays announce the coordinate of the stone and the slope of the imaginary line connecting the most recently played stone and the previously played stone. *Continued on page 4*

## **Pente Distance**

### **Common Core Standards KS-MO**

- **Coordinates**  
**6.NS.66.GM.A.3**
- **Slope**  
**8.EE.4, 58.EEI.B.2a**
- **Distance (Pythagorean Theorem)**  
**8.G.88.GM.B.8**

## Geogebra—

—Fazila Patel

Earlier this year this year GeoGebra released an AR (augmented reality) version for iOS platforms. The good news is that they recently announced the availability of this powerful app for non-iOS platforms. Android users who have google ARCore installed on their devices can now also explore and enjoy GeoGebra's AR. For instructions on how to install GeoGebra's AR on an android device, please visit: <https://www.geogebra.org/m/jhcywuqw> where Tim Brzezinski will walk the reader through each step.

Furthermore, Tim has excellent tutorials on how to use GeoGebra's AR here: <https://www.geogebra.org/u/tbrzezinski>.

For the curious minds, Tim is a FT Independent Mathematics Education Consultant, Mathematics Teacher, and Accredited GeoGebra Trainer and Author (Brzezinski Math). He is a former FT High School Mathematics Teacher (Berlin High School, CT) w/15 years experience (2002 - 2017) and PT Mathematics Instructor (Central Connecticut State University) w/15 years experience (2002 - 2017). Mr. Brzezinski facilitates active and engaging GeoGebra professional development workshops for Mathematics Teachers and Administrators worldwide. In these workshops, he demonstrates how GeoGebra can serve as an powerful platform that effectively fosters active, student-centered, and differentiated discovery-based learning, meaningful remediation, and ongoing formative assessment. Mr. Brzezinski also continues to author interactive GeoGebra resources for Mathematics Teachers worldwide. He

also creates interactive GeoGebra content for publishers and other ed-tech companies seeking to accompany their curricula with such material. Mr. Brzezinski is also a non-professional magician and enjoys spending lots of time with his wife and their three young energetic children.

His social media handles are:

**Twitter: @dynamic\_math**

**Facebook: Brzezinski Math**

**Instagram: brzezinski\_math**

**Editor's Note:** *Please watch Tim's tutorials on how to generate three dimensional objects in AR using GeoGebra. You and your students will not be disappointed!*

## *Pente continued*

—Alan Gilmore

The play begins and continues as in Pente, Pente Coordinates, and Pente Slope but in addition the distance between the most recently played stone and the previously played stone is announced. This distance is, of course, the square root of the sum of the squares of the rise (change in y) and the run (change in x) between the two stones in question.

We have tournaments and students invariably want to challenge me to a game. In teaching the game I have a spokesperson for the class (getting input from the class) play me as I project a board and moves through a Smartboard or a projector. You can access a digital board for Pente through the KCATM website under links. It is constructed is an Excel Spreadsheet.

For more information

Email me: [almgtop@msn.com](mailto:almgtop@msn.com)

Many games online including Pente:

[www.boardgamegeek.com](http://www.boardgamegeek.com)

Link dedicated to Pente:

[www.pente.net](http://www.pente.net)

Instructional Page:

[www.pente.net/instructions.html](http://www.pente.net/instructions.html)

Pente online:

[www.pente.org](http://www.pente.org)

[www.flyordie.com/pente/](http://www.flyordie.com/pente/)

KCATM (click links and files)

[www.kcatm.net](http://www.kcatm.net)

Go to [www.kcatm.net](http://www.kcatm.net) and click links and files then open “Pente Board” to access a digital Pente Board and pages with an example first few moves.

## KCATM-NCTM Math conference 2018—

—*Editor*

This year, the KCATM will be co-hosting the NCTM regionals and we would like to extend our invitation to all our members, teachers, principals, school administrators in the KC metro area to attend NCTM's regional conference on Nov 1-3, 2018 at the Kansas City Convention Center. For details about the conference, please turn to page or visit: <https://www.nctm.org/kansascity/>. Be sure to visit our stall at the conference to signup, re-new your KCATM membership or simply to say "Hi!".

The opening session *Dreaming and Standing on Their Shoulders* will be presented by Dr. Christine Mann Daren on Thursday, November 1 from 5:30-7:00pm. Here's a short blurb about Dr. Daren taken from NCTM's page:

"From cutting open a "talking doll" at age 5 to see what made her talk, to helping her dad with their car as a child, Darden tells how these experiences led to her interest in the physical sciences and ultimately to her love for plane geometry in high school. She loved how the content of the geometry class related to physical situations; and she loved how the material was presented! It was then that Darden began to think of mathematics as a college major. She goes on to tell her story. How, even though that geometry class was her highest level of high school mathematics, she was able to graduate college with a degree in Mathematics Education which ultimately led her to positions as a "Human Computer" and an "Aerospace Engineer" at NASA where she worked for 40 years, for 25 years as a researcher in Sonic Boom Minimization and finally in Senior Leadership.

**Bio:** Darden was recently included in the book, "Hidden Figures," by author Margot Shetterly as one who stood on the shoulders of Katherine Johnson, Dorothy Vaughn, and Mary Jackson, NASA "Human" Computers" who as members of the segregated West Computers contributed to the NASA Space Program in the early 1960s and who in 2016 were featured in the Twentieth Century movie of the same name."

For more information about the other guest speakers, please visit: <https://www.nctm.org/kansascityprogram/>

For more information about the conference please refer to page 6.

**Lastly, (students 18+, student-teachers, cough, cough!) please considering signing up as a volunteer**

### **Benefits of volunteering:**

- Free volunteer t-shirt
- Excellent networking opportunity
- Discounted Volunteer Registration by using the code VOL18 for non-member full registration
- College students who volunteer a minimum of four hours may attend any session on the same day they volunteer for FREE. They are not required to register.

Volunteer sign up form: [https://docs.google.com/forms/d/e/1FAIpQLSdD2AKDl3qXot3cZXQzmjDxhB\\_9zj0Adx8jC1YLPm0SF8yjNQ/viewform](https://docs.google.com/forms/d/e/1FAIpQLSdD2AKDl3qXot3cZXQzmjDxhB_9zj0Adx8jC1YLPm0SF8yjNQ/viewform)

# NCTM Regional Conference & Exposition 2018

KANSAS CITY, MO | NOV. 1-3

**Save the Date!**



PREMIER MATH EDUCATION EVENTS

## Innovate. Collaborate. Learn.

NCTM Regional Conferences & Expositions are an opportunity to share knowledge and learn with leaders in the field of mathematics education. Gain new strategies to unleash the mathematical mind of every student when you take advantage of superior math resources right on your doorstep.

### What you'll get:

- Innovative ideas you can immediately put to use
- Updates on classroom best practices from recognized innovators
- In-depth discussion about the latest education resources
- Knowledge-sharing with like-minded peers
- Interaction with the latest tools and products in the robust exhibit hall

### Meet your goals with strands:

- Teaching and Learning: Engaging Students in Meaningful Learning
- Celebrating Differences: Access, Equity, and Empowerment
- Specializing Education: Access, Equity, and Empowerment
- Curriculum: Making Connections
- Tools and Technology
- Assessment
- Professionalism: Collaborating and Growing Together
- Innovations in Integrated Learning

### Who should attend?

- Pre-K–Grade 12 classroom teachers
- Math coaches
- Administrators
- Math teacher educators
- Preservice teachers
- Math specialists

Join NCTM in Kansas City and discover the tools that will help you promote the mathematical habits of mind that will lead your students to college and career success.



Learn more at  
[nctm.org/regionals](http://nctm.org/regionals)  
and follow us on



NATIONAL COUNCIL OF  
TEACHERS OF MATHEMATICS

#NCTMregionals



## *Brain Teaser—for All*

-Rita Barger

### **SOLUTION to the last brain teaser...**

Last issue's brain teaser asked you to identify who "we" are. The teaser went like this:

- ♦ Twice 8 are 10 of us, and 10 are three.
- ♦ 3 of us are 5. What can we be?
- ♦ If this is not enough, I'll tell you more.
- ♦ 12 of us are 6, and 9 but 4.
- ♦ What are "We"?

The answer is that "we" are the number of letters in the numerals written out as words.

### **NEW PROBLEM...**

For this issue I thought we'd attempt a shorter one. What mathematical symbol can you put between 5 and 9 to obtain a number that is larger than 5, but smaller than 9?

Have fun!

As always, please send your answers to me at [bargerr@umkc.edu](mailto:bargerr@umkc.edu). I would like to list names of those who solve the teaser in the next newsletter.



# News & Notes—

—Fazila Patel

## News

This year the U.S team won first place, for the third time in four years, at the 59<sup>th</sup> International Mathematics Olympiad which was held in Cluj-Napoca Romania on July 3-14 with 116 countries participating. This is a very exciting moment and a matter of pride for all math students and teachers in the United States. Here's hoping for more wins in the near future!

## KCATM's Math Contest 2018-2019

KCATM will be hosting its 40<sup>th</sup> regional contest for grades 4-12 on the 31<sup>st</sup> of March 2019. This is an exciting opportunity for students to unleash their creativity, and love for mathematics as well as engage in some healthy competition with their peers. For details on registering your school and team, please visit: <http://kcatm.net/contest.html>



## Twitter Hashtags

The internet is full of amazing math resources for teachers. One of them is the use of #MTBoS on Twitter, Facebook, and Instagram. Teachers can use this hashtag when posting but also for searching for newer ways to improve their classroom math practices. For an extensive list of the most popular twitter hashtags, please visit: <https://mtbos.org/twitter-hashtags/>

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