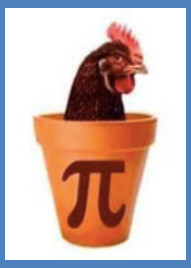
Puget Sound Council of Teachers of Mathematics March 13, 2018

# Puget Soundings

***Spring Dinner: May 14th! Sign-up at: https://tinyurl.com/PSCTM-Spring-2018***

**HAPPY 'PI' DAY!**



**March 13, 2018** **Joyce Frost, Editor**

## Calendar

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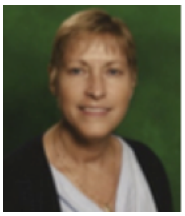
|---|---|
| **NWMI Workshop** | **March 24, 2018 Lynnwood HS** |
| **Spring Dinner Dr. Julia Aguirre** | **Bishop Blanchet HS Monday, May 14, 2018** |
| **Art intersect Math Exhibit Center on Contemp. Art** | **March 1 - April 14th Celebrate Pi Day The Beauty of Math - 6:30 pm** |

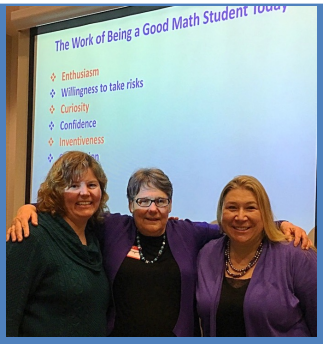
***Board:** Jane Bissonnette, pres, Christy Frary, past pres, Traci Cotton, Social Media, Joyce Frost, program & newsletter, Sharon Young, secretary, Art Mabbott, Treasurer/NCTM rep, Joe Frost, web page, Kim Schjelderup, Remy Poon, Saraswati Noel, Angela Ensminger, Lynn Adsit*



## President's Letter - Jane Bissonnette

As we approach the holy grail of mathematic celebrations-PI Day-I hope this newsletter finds you in good spirits and happily plugging along. (See page 3 for Pi Day videos and ideas!)
I am so proud and grateful for all the math education opportunities we have here in the Puget Sound area. Of course, my two recurring favorites are the quarterly dinners (see page 3 for info on our Spring dinner) and the Northwest Mathematics Interaction (NWMI) Saturday Workshops (see back page for program). These two events feature camaraderie, classroom and math tips and good food. The presentations are given by prominent professionals in the field. I always leave energized to try something new in the classroom. Be sure to look through our newsletter, website (http://www.psctm.org) and Facebook page for these and other upcoming events.

Many hands make light work. All these events require dedicated people to organize and support them. We could really use your support not only in attending our events but joining us on our board. In particular, we are looking for a new board member to help with program aspects of our dinners. Joyce Frost, the current program chair, has graciously agreed to mentor the new program chair, so you would have lots of experienced help. Come join us. You can contact me or any board member for more information.
- - - Jane Bissonnette, (jbissonnette@bishopblanchet.org)



# PSCTM Winter Dinner Highlights! 2/12/2018

## *Challenged in Kenya– What Determines a Good Math Teacher or Student?*

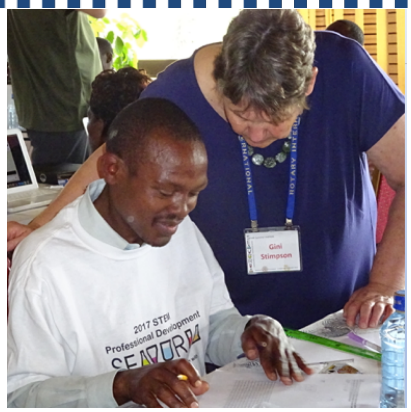
### *Dr. Gini Stimpson,*

**UW Extension and TDG**

***Shifts in What It Means to be a Good Math Teacher and Student Over My 53 Years as a Teacher: Reflections Inspired by My Recent Experiences Working with Teachers in Kenya***

Gini traveled with a group called Seavuria sponsored through Rotary International. Seavuria partners students in the Pacific Northwest with students in Kenya on projects using real world issues from science and technology, inspiring them to make a difference in their communities, their country, and the world.

Gini prepared for her trip, working with Kenyan math teachers, by asking questions from the team about what to expect. She was told that there is little eye contact or emotion when teaching both teachers and students, nearly all teachers taught some math through calculus, statistics, and some applied math, and that 80% of the students fail the end-of-course exams.




Armed with research on how students learn mathematics, Gini focused on helping the Kenyan teachers shift from what in the past constituted a good math teacher/good math student to new practices based on current research. Gini said that the teachers were very surprised that she listened to and asked questions of them as they worked in groups. Teachers and students (later in the day) expressed amazement and appreciation for respecting their ideas and believing their ideas were worthy of being probed and extended - so very different from the current teaching practice consisting of repetition and drill. All participating teachers said that they intended to listen to student thinking and try to include an opportunity in each day's lesson for every student to make sense of a targeted math idea. They wanted to balance the required coverage with sense making.

***Mathematics knows no races or geographic boundaries; for mathematics, the cultural world is one country. David Hilbert***

***I have always been interested in using mathematics to make the world better. Alvin E. Roth***

## ***Math Strong: Rethinking Routine Practices to Engage and Empower Young Mathematical Minds.***

***Julia Aguirre, Ph.D. Associate Professor,***
***School of Education, UW Tacoma***

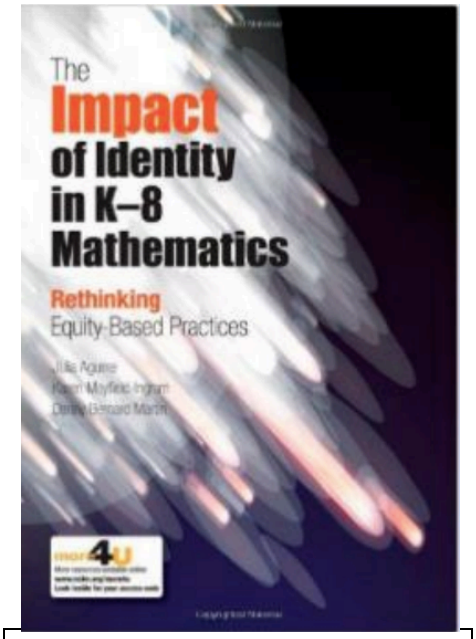
**PSCTM Winter Dinner Monday, May 14, 2018 at Bishop Blanchet HS**

**5pm Social, 6 pm dinner, 7 pm presentation RSVP at our Eventbrite site:**
**https://tinyurl.com/PSCTM-Spring-2018**

**We will explore our math vision for children and youth and how we can make small adjustments to instruction that promotes positive math identities and learning K-12.**

Dr. Julia Aguirre is part of a $1.5 million NSF grant to make mathematical modeling relevant to elementary school students. Her scholarship and professional development work focuses on mathematics teaching and learning, teacher knowledge and practice, and culturally responsive mathematics pedagogy.

Dr. Julia Aguirre is the co-author of the book: ***The Impact of Identity in K-8 Mathematics: Rethinking Equity Based Practices*** by Julia Aguirre, Karen Mayfield-Ingram, and Danny Bernard Martin. This book explains mathematics identity and agency and highlights five equity-based practices important in strengthening mathematical learning and promoting positive student mathematical identities




***Pi-ku:***
***Three point one four one***
***Five nine two six five three five***
***Eight nine. And so on.***

***Check out the digits of Pi! This Unihedron downloadable pdf has*** *350,390 digits of pi visible. Each line contains 600 digits of pi. The first 440 most commonly recognized digits are visible from a distance.*

***Never talk to pi. He'll go on forever.***

***What was Sir Isaac Newton's favorite dessert? Apple Pi!***

## *Pi Day Celebrations!*

by Traci Cotton

People all over the world celebrate **Pi Day** on March 14th. Take a couple of minutes and check out this fun video about this special day.
https://www.youtube.com/watch?v=0kd6wX6cWWM

Looking for a clever way to learn more? Here's a link to an audio version of *Sir Cumference and the Dragon of Pi.*
https://www.youtube.com/watch?v=xJ4MbU8928c
Or, check out Danica McKeller's Pi episode at:
https://www.youtube.com/watch?v=8-cazxAL_tU

You can also celebrate Pi day with friends and family at the Math intersect Art exhibit with a talk by Dan Finkel and Katherine Cook on "The Beauty of Math" at the Center on Contemporary Art at 114 Third Ave S. Seattle.

### *3.1415... Ways to Celebrate Pi Day in the Classroom*

TI Bulletin Board
https://education.ti.com/en/bulletinboard/2018/march/waystocelebratepi?utm_campaign=CL12818%20Pi%20Day%20Bulletin%20Board%20Activities&utm_medium=email&utm_source=Eloqua&utm_content=CL12818%20Pi%20Day%20Bulletin%20Board

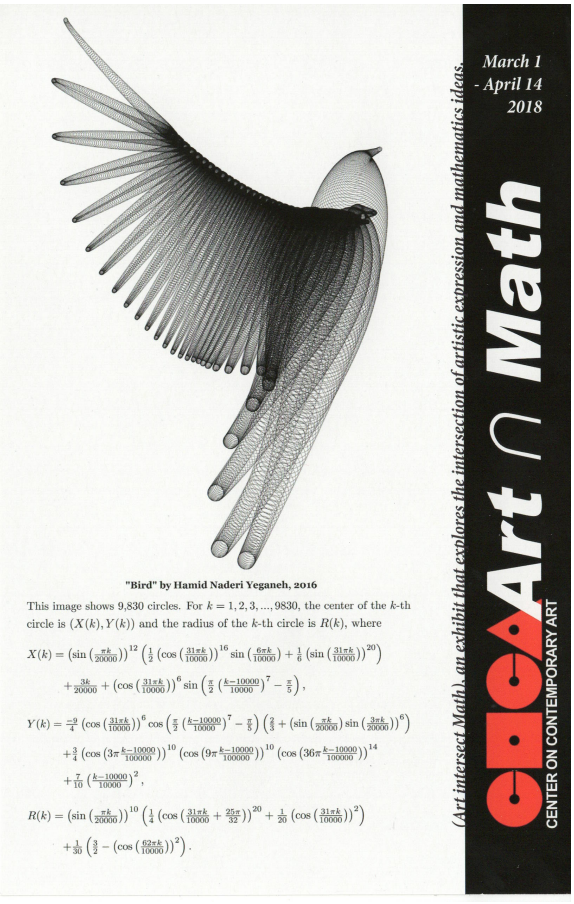
Celebrate the 31st annual celebration of Pi Day with the Exploratorium, *https://www.exploratorium.edu/pi/* where Pi Day was founded by physicist, Larry Shaw. Click here for a brief history of Pi.
https://www.exploratorium.edu/pi/history-of-pi

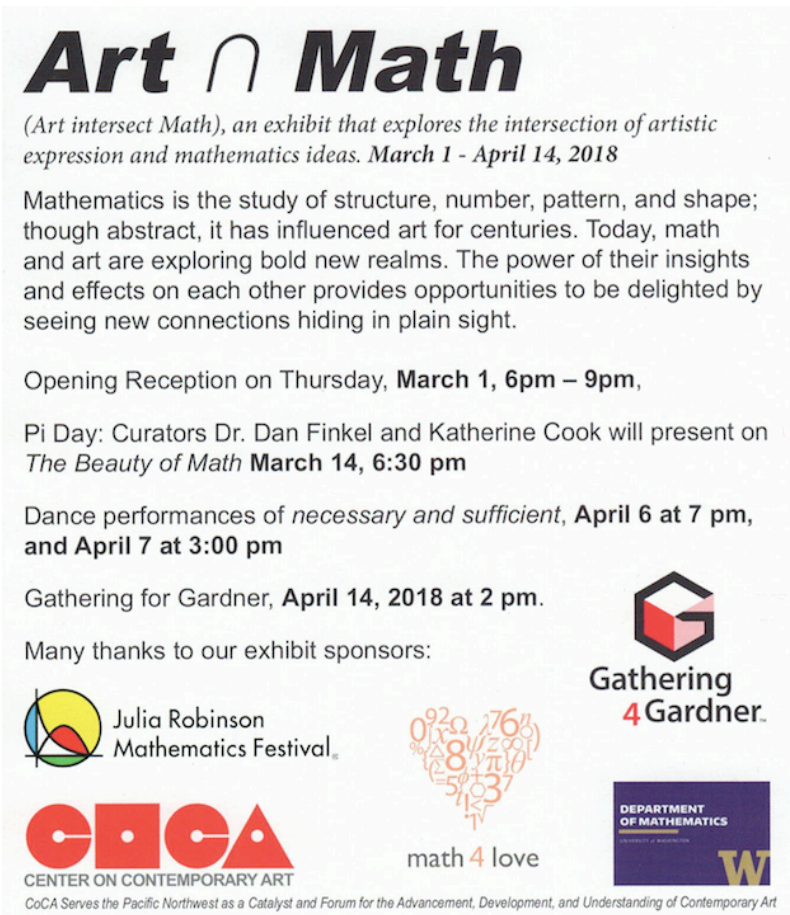
# Julia Robinson Math Festival 2018

**Seattle's 7th Annual Julia Robinson Festival took place March 10, 2018, at the UW.**

PSCTM members Art Mabbott, Joyce and Joe Frost, Angela Ensminger, and Remy Poon volunteered for this year's Festival. Here we are setting up for 300+ students.

Closing talk by Dan Finkel on the *Beauty of Math: Equivalence*, a wonderful finale to a great festival!




Don't miss this free exhibit, *Art intersect Math*! Curators Dr. Dan Finkel and Katherine Cook (past PSCTM dinner presenters and co-founders of *math 4 love)* invite you to attend from March 1 - April 14, 2018 at the Center on Contemporary Art at 114 Third Ave S. Seattle, WA 98104. Mathematician/Artist Jayadev Athreya (past PSCTM dinner presenter) will be exhibiting along with other mathematicians and artists.

## Math Jokes!

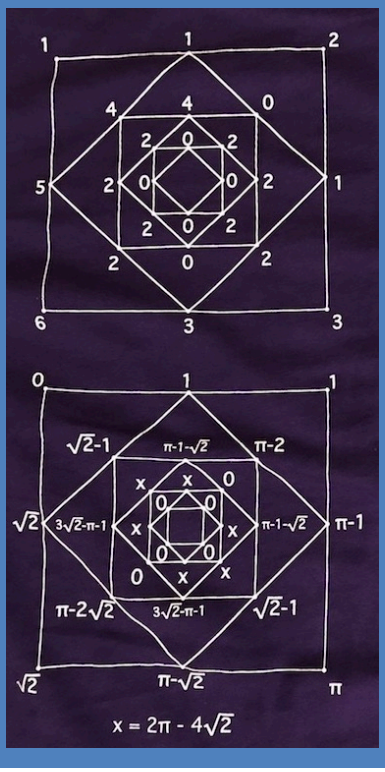
***There's a fine line between the numerator and the denominator and only a fraction of people will understand.***

***I can see from your graph that you're plotting something!***

*3.14% of Sailors are Pi Rates*

Volunteers for the **Julia Robinson festival** received a tee shirt with a puzzle on the back. Here it is for your solving pleasure!

Take any four starting numbers at the corners of the square. At each midpoint, put the positive difference of the numbers at the endpoints. Repeat. Does it always end up with all zeros? What sets of numbers last a long time *before arriving at all zeros?*




## Six Degrees of Separation

As a mathematician, I have long been intrigued by the concept of ***Six Degrees of Separation***, "the idea that all living things and everything else in the world are six or fewer steps away from each other so that a chain of ... statements can be made to connect any two people in a maximum of six steps" (https://en.wikipedia.org/wiki/Six_degrees_of_separation). I belong to a travel group called Seattle Tacoma Friendship Force. Our club hosts guests from other clubs around the world and they host us. On a trip to Lincoln, Nebraska, I went to church with our host. I mentioned that we also attended a downtown United Methodist Church like hers. She said that one of her church friends has a brother who also attends a Seattle downtown UMC church. During the offertory, our host slipped a note to her friend, who happened to be sitting behind us. It turns out that her brother is a dear friend of mine - I sit next to his wife in choir and he sits behind me. While in Thailand, a fellow club member, Carol and I wanted to connect up on Facebook with our host, Khun Chanya. When I pulled up Carol's name, it said, "friends with Claire Gebben". I asked Carol, "How do you know Claire?" Strangely, Carol and Claire have been in the same book club for 20 years! I also sit next to Claire in choir. Therefore, if you want to know everyone, just join my church choir! (If you sing soprano, you can sit by me!) - ***Joyce Frost***

## You can't pass a law saying Pi is 3

There is a famous story about a con artist trying to convince the Indiana State Legislature to declare the value of $\Pi$ to be 3 and grant him a patent on the new value, which would make calculations much simpler and faster. The plot was foiled by a visiting mathematician who, when asked if he would like to meet the genius behind the great discovery, answered, "No thank, you, I've met all the crazy people I care to."

The story is partly true, and the odd part is that it wasn't a con artist, but an amateur mathematician who actually believed he was doing a good thing for the world. He wasn't trying to simplify $\Pi$, he was trying to grant Indiana a patent on a method of squaring the circle, which he believed would allow the state to charge royalties for others who used his discovery. His resume was impressive, if you didn't look too carefully. Several of his earlier papers had been published by the *American Mathematical Monthly*, but with the disclaimer "Published at the request of the author." His current paper was so convoluted and used such needlessly complex language that few of the legislators were able to follow any farther than the hype about it being a breakthrough in an ancient puzzle in geometry, squaring the circle.

To square the circle, one starts with a circle of radius of $R$ and area of $\Pi R^2$ and creates a square with the same area, or side length of $\sqrt{\Pi}R$, using a straightedge and compass. Sadly, Ferdinand von Lindeman had proven 12 years earlier that $\Pi$ is a transcendental number and that squaring the circle is impossible. Ferdinand von Lindeman's proof that $\Pi$ is transcendental makes use of Hermite's proof that $e$ is transcendental and that $e^{\pi i} = -1$ (one of the most elegant equations in math).

Evelyn Sander has an explanation of why constructing a segment of length $\sqrt{\Pi}R$ is not possible: http://www.geom.uiuc.edu/docs/forum/square_circle/.

Here is a summary of her explanation: Starting from any segments of length x and y, use the straightedge and compass to construct segments of length x+y, xy, x-y, x/y, and the square root of x or y. Note: these are all algebraic operations and any finite combination of these operations can be described with an algebraic equation having rational coefficients. Adding segments N times gives a coefficient of N, and multiplying M times gives a coefficient of M.

A transcendental number is one that is not the root of any algebraic equation with rational coefficients. $\Pi$ cannot be described with any finite combination of operations performed with the straightedge and compass. --- ***Joe Frost***

# Upcoming Professional Development Opportunities!

***NWMI Spring Workshop*, March 24, 2018 Lynnwood HS (earn 6 free clock hours!)**

**Sign-up on Eventbrite at: https://tinyurl.com/NWMI-Spring-2018**

**Program:**

***Does Commutativity Really Work?* Art Mabbott, Scholars Online**
***3 Act Tasks:* Traci Cotton, Title 1 Math Coach, Jackson Elementary**
***Julia Robinson Festival Problem:* Pilgrim's Puzzle: Joyce Frost, LWSD**
***Hands-on Reflections and Symmetry on the Sphere:* Dr. Jim King, UW**
***Movie Mystery Series: The Archimedes Palimpsest:* Joe Frost, UW**
***Anti-Primes and Backwards Times:* Randall Creek**

**TI USER GROUP: Lynn Adsit, Art Mabbott, and Kim Schjelderup**

The FREE Monthly TI User Group is on the FIRST SATURDAY of the month. Lynn, Art, and Kim are just back from the TI International Conference with lots of new things to share! Also, this User Group fulfills the new Washington State STEM in-service requirement. Meet at Mercer Island High School from 9am-12 for a total of **3 free clock hours**. Hope you are able to make it! To attend, send an email to: lynn.adsit@mercerislandschools.org. That way they will have enough snacks and drinks for everyone!

## 2019 Northwest Math Conference - October 10 -12, 2019

## Tacoma Convention Center and Murano Hotel

Plan to join teachers from **Washington, Oregon, and British Columbia** attending the 2019 Northwest Math Conference. It will be held October 10-12, 2019 at the Tacoma Convention Center and the Murano Hotel.

**The conference committee wants to hear from you!!**

- *What keynote speakers would you like to hear?*
- *What topics would you like to see on the program?*
- *What role would you like to help with on the planning committee?*
- *Would you like to be a speaker or conduct a workshop to share a teaching idea?*

Let us hear from you by email or by phone.

Sharon Young, 2019 NWMC Chair email: syoung@spu.edu phone: 425-785-3027

It is with sadness that we inform you of the passing of 2013 Northwest Mathematics Conference Co-chair, Russ Killingsworth. Russ Alan Killingsworth was born on January 15, 1957 and passed away January 17, 2018 in Seattle, Washington. He is buried at Tahoma National Cemetery. Until this past December, he was also co-chair of the 2019 Northwest Math Conference. Russ was past president of the Washington State Math Council and also served on the National Council for Accreditation of Teacher Education. For the past 20 years he taught at Seattle Pacific University and was very involved with Boy Scouts of America. Donations may be made in Russ's name to: Partners Global Network, www.partnersglobalnetwork.org