Puget Sound Council of Teachers of Mathematics June 9, 2018

Puget Soundings

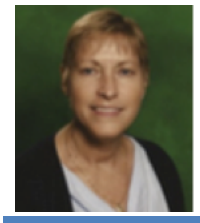
Jane Bissonnette with her server from the Pi Pizzeria in D.C.

June 9, 2018 Joyce Frost, Editor (frostjoycee@gmail.com)

Calendar

PSCTM *Fall Dinner*	**October 15, 2018 Bishop Blanchet HS**
PSCTM *Winter Dinner*	**February 11, 2019 Bishop Blanchet HS**
PSCTM *Spring Dinner*	**May 20, 2019 Bishop Blanchet HS**

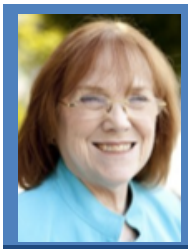
Board: *Jane Bissonnette- President, Traci Cotton- President-elect/ Social Media, Joyce Frost- Program/ Newsletter, Sharon Young- Secretary, Art Mabbott- Treasurer/ NCTM Rep, Joe Frost- Web Page, Kim Schjelderup, Saraswati Noel, Angela Ensminger- Representatives, Lynn Adsit- Membership, Remy Poon- PSESD Liaison*

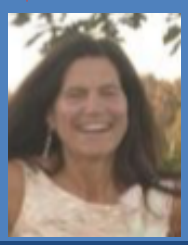


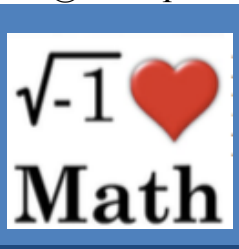
President's Letter - Jane Bissonnette

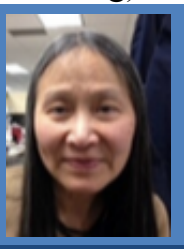
I had the good fortune of attending the National Council of Teachers of Mathematics (NCTM) Annual Meeting and Exposition 2018 in Washington, DC during the last week of April. I joined nearly 9,000 other mathematics educators from around the world in attending a variety of presentations and workshops to hear new ideas and approaches for presenting mathematical ideas in the classroom. The theme of the conference was, "Empowering the Mathematics Community". There was a lot of focus on student-centered lessons that engage the students where they are ready to meet mathematics such as in their music and interests. One example is a session I attended where we analyzed statistics from current movies. A shout out to our very own **Art Mabbott** who presented an entertaining session on trigonometric functions using an app downloaded to a tablet. When I needed to take a break for lunch I went (where else?) but to the **Pi** Pizzeria. Above is a picture of me with the server displaying the restaurant's logo.

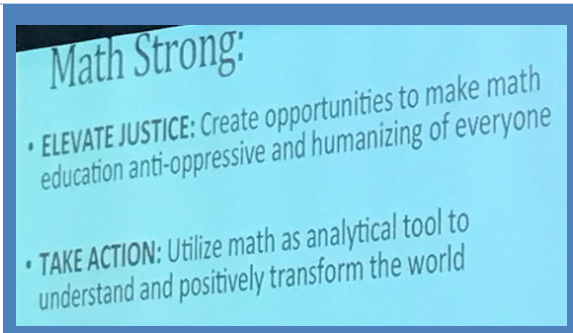
- - - Jane Bissonnette, (jbissonnette@bishopblanchet.org)

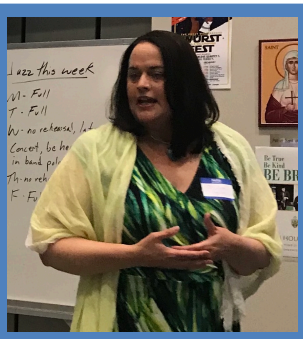


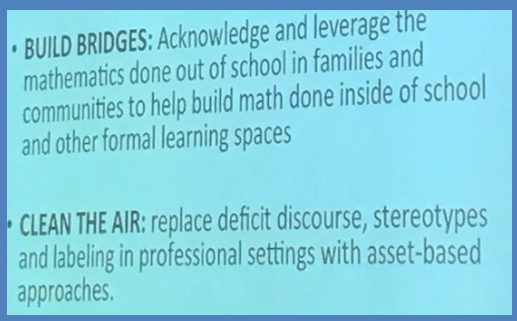











PSCTM Spring Dinner
May 14, 2018
Math Strong: Rethinking Routine Practices to Engage and Empower Young Mathematical Minds.

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

As stated in her description, Dr. Aguirre, discussed, "*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."*

An emphasis for Puget Sound Council of Teachers of Mathematics for the past couple of years has been to highlight ways that we in the Math Education community can be more responsive to equity in our classrooms. One of my favorite slides from Dr. Aguirre's presentation was **"Cultivating Math Strong students requires...**

- ✓ Access to high quality content
- ✓ Curriculum that is both a mirror and a lens
- ✓ A systemic and strength-based approach to eradicating inequities
- ✓ Fair and equitable instruction
- ✓ Focus on learning not labeling
- ✓ Strong relationships with students, families and communities
- ✓ Unequivocal faith"

Equity is a word that we hear a lot about in education these days. Here is Dr. Aguirre's quote on equity, "Equity does not mean that every student should receive identical instruction. Instead, equity demands that responsive accommodations be made as needed to promote equitable access, attainment, and advancement in mathematics education for each student."

Finally, I was really interested with what she had to say about "*rethinking routine practices for instruction*". These ideas provide insightful ways to improve our classroom instruction.

- ✓ Provide meaningful feedback, orally and in writing. Include strengths and areas of growth
- ✓ Expand number talks to include mathematizing the world routines
- ✓ Leverage students' mathematical thinking and lived experiences to customize curricula for your students

Thank you so much to Dr. Aguirre for a really engaging and thought-provoking presentation. For those teachers who missed her talk, we plan to have her speak for our 2019 Northwest Mathematics Conference which will be held October 10-12, 2019 at the Tacoma Convention Center. The theme is "We All Count".

Joyce Frost, Program Chair

A calm and modest life brings more happiness than the pursuit of success combined with constant restlessness. - - - Albert Einstein
Where there's a will, there's a way. - - Albert Einstein

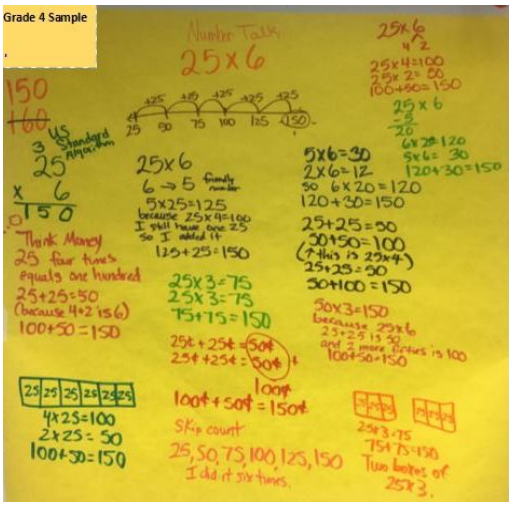
The above quotes were offered to a bellhop in Japan in 1922 in lieu of a tip when Einstein found himself without coins. These two notes (on hotel stationery) recently sold at auction for a combined $1.8 Million.

We don't want everyone to be an engineer. The fashion crisis alone would be troubling. - - - Bill Nye, "The Science Guy"

Number Talks

I am lucky to have a teaching job where I teach lessons in a variety of classrooms in grades K to 5. This year I've been working on conducting number talks. There are so many great resources available to get started with number talks. I have been studying and learning ideas from ***Making Number Talks Matter*** by Cathy Humphreys and Ruth Parker.

I cannot believe the rich classroom conversations that have been happening!



This is a sample of a number talk I did with a class of 4th grade students this winter. I posted the problem 25 x 6 and gave students some quiet think time to mentally calculate a product. Students quietly gave me a signal with their fingers in front of their chests to indicate whether they had a solution, or more than one, to the problem. After several minutes, I asked for students to volunteer solutions and I recorded their responses. On this day, we only had two solutions. Some days there are more than two solutions. You know you have some misconceptions to work on when there are several responses!

After we have collected responses, I open up the conversation for students to share their thinking. I record each strategy, using a new color for each new idea, and students lead us through their strategies. The other students in the class are responsible for listening and trying to make sense of the ideas presented. During our sharing, I often stop to give students time to talk with a student or two students nearby. Sometimes the buddy talk is to clarify misconceptions and ask questions. Sometimes, I ask students to talk about two strategies they think are very similar, or two strategies that appear to be vastly different. At this point in the year, some students are asking critical questions about strategies and the students are taking leadership of the conversation. This gives me the role of being a facilitator. I love it! These lessons have taken around 20 to 30 minutes. I have not been able to measure confidence levels, but I have noticed that almost every student has shared so far this school year. Some students who have been reluctant to share out are beginning to be the first to share strategies. Together, we've built a community of trust, and we are investigating ideas and celebrating mistakes along the way. - - *Traci Cotton*

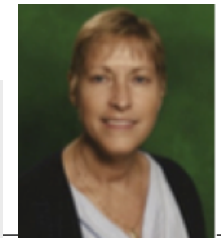
Have you heard…?

Have you liked and followed PSCTM on Facebook and Twitter? Our social media pages have lesson ideas, jokes, quotes, research, professional learning opportunities, and much more. Following us gives you information about PSCTM events! Spread the word! Invite friends and colleagues to follow PSCTM too. ***Traci Cotton***

Math Break - *This is great mental math practice!*

Tell your students you can "see through dice" all the way to the bottom numbers. Roll five dice. Pretend you are looking through the dice. What you are actually doing is adding up the top numbers of the dice. Subtract this number from 35. The result will be the sum of the bottom numbers on the dice. Have your students confirm your findings. Discuss with your students why this works: The sum of the opposite sides of dice are always seven. If you have five dice the sum of the top and bottom of the dice will equal 35 (5 x 7). Have your students try doing the trick with each other. If five dice are too many, try using a smaller number. Discuss what the target number would be for more dice and for fewer dice.

- - - *Jane Bissonnette*



Math History: Nathaniel Bowditch, America's Navigator

Nathaniel Bowditch was an American mathematical genius. Born in Salem, Massachusetts in 1773, he was taken out of school at age 10 to help his father in the family cooperage. At age 12, he was apprenticed as a clerk in a chandlery firm, where his intelligence and fierce desire to learn attracted the attention of several local learned men. Impressed with his desire to educate himself, they supplied him with books to study. Since many of the best books were written by Europeans, Bowditch first taught himself their languages. French, German, Spanish, Latin, and Greek were among the two dozen or more languages he studied during his life. He started studying Algebra at the age of 14 and Calculus at 16. Also, at the age of 16, he began the study of Newton's *Principia*, translating parts of it from the Latin. He even found an error in the book but lacked confidence to publish it until much later.

One of the prizes taken during the Revolutionary War had contained the library of a famed Irish scholar. A group of educated men in Salem bought the books and used them to found the Philosophical Library Company, reputed to be the best library north of Philadelphia at the time. Two Harvard-trained ministers convinced the company to allow Bowditch use of the library and another helped guide his studies, which he carried out after work and in his spare time. By the time he was 21, he was considered the outstanding mathematician of the Commonwealth, and perhaps of the entire country. He was forever grateful to the men and to Harvard.

He went to sea in 1794 as the captain's writer and second mate. Reliable chronometers were new and very expensive at the time, so navigation relied on dead reckoning and a knowledge of wind and current. One's position north and south could be determined by the height of the Pole Star, but one's position east or west required either a good chronometer or the ability to perform the intricate calculations of determining longitude by "Lunar distance." Most ships used the technique of sailing to the latitude of the desired destination then turning east or west until reaching their goal. This was fine for continents, but a little iffy for finding small islands, especially if their travels were upset by a storm.

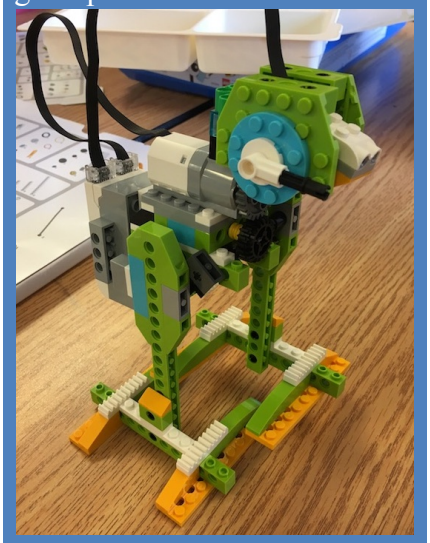
At the time, John Hamilton Moore's *The Practical Navigator* had been the standard text on navigation for many years. Early in Bowditch's first voyage, he turned up errors in the book and found it necessary to recompute some of the tables used for routine tasks. By the end of his second voyage, word of his continued corrections reached a publisher who invited Bowditch to publish a revised edition under the title of *The American Practical Navigator.* Bowditch found more than 8000 errors in the standard book and decided to completely rewrite it and put nothing in the it that he could not teach to every member of his crew. He published *The New American Practical Navigator* in 1802 under his own name and is credited with helping to pave the way for Yankee supremacy of the seas during the clipper ship era.

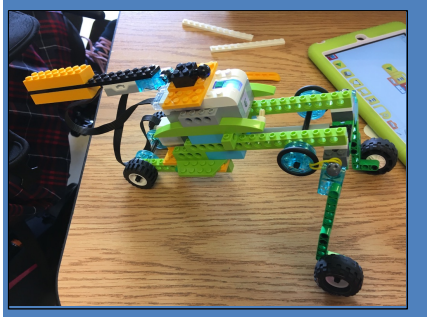
At the age of 30, Bowditch retired from the sea and took up the position of president of the Essex Fire and Marine Insurance Company. In his spare time, he published papers on the orbits of comets, applications of Napier's rules, magnetic variation, eclipses, calculations on tides, and the charting of Salem Harbor. In 1814 he began the translation of Laplace's *Mecanique Celeste,* eventually publishing translations of four of the five volumes with expanded explanations to allow students of mathematics to more easily trace the steps involved in reaching the most complicated calculations.

He was awarded an honorary Master of Arts, and later, an honorary Doctor of Laws by Harvard. He was elected one of Harvard's Overseers in 1810 and elected to the Corporation in 1826, just in time to lead a small group of men who rescued it from financial disaster by forcing necessary economies on the college's reluctant president. When he passed away in 1838, his son took over publishing new editions of *The New American Practical Navigator*. The US Navy bought the copyright in 1868 and has continued publishing new editions ever since, though the 2017 edition is expected to be only available in electronic form. - - - *Joe Frost*

Math in Action!

Angela Ensminger's 5th graders at St. Madeleine Sophie used the LEGO WeDo 2.0 System to build different transportation options for the Seattle Prep Robotics Extravaganza, April 21, 2018. The students built a cable car system, rocket launcher, dump truck and AT-ST Walker. Thanks, Angela, for these great pictures!





Just How Fast Is That Boat Going?

As I watched a large boat going up Lake Washington at what looked like much faster than normal, I wondered if there was a way to estimate the speed from the bow wave or wake. I could see that the crest of the bow wave was at the bow and the distance to the next crest was about halfway back to the stern. I decided to look into whether there is a formula that could tell me the speed of the boat from those observations. It turns out that the formula is really quite simple, though the simplicity is something of an artifact of there being several factors involved that introduce uncertainty, so a complicated formula will only give answers that look more accurate but aren't. I knew the formula as the hull speed formula, which is when the wavelength of the bow wave is equal to the length of the boat at waterline. That formula is V = 4/3 * sqrt (boat length), where V is the speed in knots and the boat length is the length of the boat at the waterline in feet. It should probably be known as the wave speed formula, because the formula isn't about the boat's hull, it is about the distance from one wave crest to the next. The yacht going past was big, probably about 100 feet long, and the distance from the first crest of the bow wave to the second crest was about 50 feet, so the boat's speed must have been about 4/3 *(7), or about 9.3 knots. One knot is one nautical mile per hour, and a nautical mile is 6000 feet instead of the 5280 feet in a statute mile. That means the boat traveling at 9.3 knots was traveling at almost 10.5 miles per hour. On land, that's a slow crawl. On the water, that is really trucking along. - - - *Joe Frost*

K-12 TEACHERS: LEARN COMPUTER SCIENCE BASICS AT THE UW THIS JULY!

CS4HS is a three-day summer program teaching computer science basics to K-12 teachers. Teachers will leave with ideas for adding simple lessons and CS content to their classes. Most attendees are middle- and high- school STEM teachers from Washington State, but we invite all interested teachers to participate. Ideal for teachers with no prior CS experience!

CS4HS DETAILS

Dates: Monday July 16 - Wednesday July 18, 2018
Location: UW Seattle campus, in the Paul G. Allen Center for CSE
Campus housing available for out-of-town guests
Cost: $50 (non-refundable)
Clock Hours: Earn 20 Clock Hours from WSTA (fees covered by us!)

For More Info and to apply: cs4hs.cs.washington.edu

Interested in an AP Statistics Institute this summer? August 20 - 23, 2018, 8 am - 4 pm, Jackson HS, Everett

The Everett Public Schools AP Summer Institute will be held at H.M. Jackson High School, 1508 136th St SE, Mill Creek, WA 98012 August 20 - 23, 2018

AP Summer Institute workshops are designed for new and experienced AP teachers to refine their practice and to teach AP classes.

Register today at: https://www.everettsd.org/aps

Questions? APSI@everettsd.org or call 425-385-APSI (2774)

Upcoming Events

Mathematical Problem Solving Workshop: South Sound Circles will be holding a three-day workshop in mathematical problem solving, **June 26-28** at the University of Puget Sound. This workshop will be valuable for both math teachers and individuals in the community who are supporting efforts to close the achievement gap in mathematics., including tutors and those working with out-of-school math and science programs. The workshop is aimed at the middle school level, but individuals working with youth of all ages can benefit. The workshop will run from 9:00 to 3:30 each day with refreshments available starting at 8:30. South Sound Circles will host lunch. Questions? Contact David Scott at scott@pugetsound.edu or 253-879-3565. Please email your name, address, email, and phone to David Scott by Tuesday, June 19th. ***Up to 15 clock hours will be provided free as a service of the Puget Sound Council of Teachers of Mathematics!***

Save the Date! National Council of Teachers of Mathematics Regional Conference will be at the Washington State Convention Center, November 28 - 30, 2018. More info to follow!

57th NW Mathematics Conference, Whistler, BC, October 18-20, More info at: 2018http://www.bcamt.ca/nw2018/

2019 58th Northwest Math Conference - October 10 -12, 2019:

WE ALL COUNT

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!! We would love suggestions.

- *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

Plans are coming along nicely for our 58th NWMC which will be October 10-12, 2019 at the lovely Tacoma Convention Center and beautiful Murano Hotel. The location is also very close to the UW Tacoma campus. Most of the major committee chair positions have been filled, but we would love to have others join us in serving on committees from program to exhibits to publicity to technology to hospitality. This is a great way to really experience the conference and work with some amazing people. Don't be afraid to join us!