

TEACHERS WHO ARE
CRAZY ENOUGH TO
THINK THEY CAN CHANGE THE WORLD, USUALLY DO.

Puget Soundings


Solving Problems: OSPI initiatives to improve student access to high-quality mathematics instruction across our state

## PSCTM Winter Dinner Monday, February 7, 2022 Arlene Crum, <br> Director of Mathematics

Office of Superintendent of Public Instruction
After diving into mathematics course-taking and the methods and materials within them, OSPI is working with educators across the state to improve both the way that we are teaching mathematics and the student access to experience it in meaningful ways.
Arlene will share information about the new Modern Algebra II course in development (available for pilot in 2022-23) as well as the Instructional Materials Review Project that will publish a list of the curricular materials aligned with Washington Educational Priorities. Bring questions about these projects and other questions about state mathematics.

Season's Greetings PSCTM members!

Despite the darker days, cooler temperatures, and dreary rain in December, this is a time of year we experience joy. Joy can come from unexpected places: the holiday light displays downtown, the customer who "pays it forward" and buys your coffee, the sounds of laughter among friends.

A fun surprise this year has been the joy found in our classrooms during the math block. We've been changing our instructional practices to be more student centered. We are working to find meaningful ways to engage our students in discourse. The teachers are stepping into a facilitator role, and orchestrating conversations to help students solidify their thinking. Time and time again, an adjective being used to describe the math block is joy. It's exciting to hear that joy is sparkling up for students \& teachers during our math lessons.

We hope you find joy and inspiration in this edition of Puget Soundings. Thank you for your continued membership and support of PSCTM. Warm winter wishes to you! Traci Cotton, PSCTM President

Renew your PSCTM membership online!


Jane Bissonnette - Past President, Secretary, Joyce Frost - Program, Newsletter, Jane Hunter - Newsletter, Art Mabbott - Treasurer, NCTM Rep, Joe Frost - Web Page, Laura Beckett, Maryke Haynes - Equity, Angela Ensminger - Membership/Social Media,


## Don't miss these 2022 Zoom PSCTM Dinners! Winter Dinner:

 Monday, February 7, 2022 Spring Dinner: Monday, May 9, 2022The Winter and Spring dinners will again be virtual.


## December

 Palindrome Dates! Did you catch the string of Palindrome dates (same forwards or backwards) over the last couple of weeks? If you missed them, don't worry - 12-22-21 to coming! There are 11 palindrome dates in December, from 12-1-21 to 12-9-21, as well as 12-11-21 and 12-22-21. U. of Portland professor Aziz Inan helpfully illustrates these at left.
## We are pleased that our Director of Mathematics for OSPI will be our February $7^{\text {th }}$ PSCTM dinner!

Arlene Crum is the Director of Mathematics at the Office of Superintendent of Public Instruction.
As a military spouse she lived, experienced and taught mathematics across the country, but is now happy to be firmly planted in Washington. She earned a Bachelor of Science in Secondary Mathematics Education at the University of Maryland, Master of Education in Administration and Supervision at Bowie State University, and Principal Certification at Pacific Lutheran University.

Her work includes development of instructional materials to improve student achievement through implementation of the Standards for Mathematical Practice, and to increase student connections between mathematics and other subject and career areas. Arlene partners regularly with Regional Mathematics Coordinators, Career and Technical Educators and national colleagues to improve access to high


## A Mindful, Mathematical Walk

Mindful walking is a great way to reduce stress. Begin your walk, inside or outside, and start by simply taking a deep cleansing breath. Pay attention to each step and notice the sensation of your feet touching the ground. Notice the way in which the parts of your foot connect with each step. Move about at a slow, steady pace. Be mindful of your breath and be purposeful in your breathing.
As you walk take-a-look around you. What do you notice? Do you feel a light breeze, or a change in temperature? What sounds do you hear? What do you see?
Rooting yourself in your environment, and enjoying a few mindful moments, can greatly reduce stress and anxiety. A brief break can also boost your productivity.
Add a mathematical element to your mindful journey.
Are there patterns in the things you see? Do you see any numbers? What can you count?
 What shapes do you see? Is there a shape you notice more often than others in this space?
This is a practice I've been trying and also using with students who need a break. See if it works for you, too! -Traci Cotton

## The Mathematics of Christmas

## For those contemplating just how Santa delivers all of those presents each year, enjoy this MAA shared article on the math involved:

"That's quite a challenge. However, by traveling east to west, Santa can take advantage of the different time zones, and that gives him 24 hours. Santa can complete the job if he averages 1250 household visits per second. In other words, for each eligible household with at least one good child, Santa has 1/1250th of a second to park his sleigh, dismount, slide down the chimney, fill the stockings, distribute the remaining presents under the tree, consume the cookies and milk that have been left out for him, climb back up the chimney, get back onto the sleigh, and move on to the next house."
Teaching is hard, but perhaps we will leave Christmas Eve gift giving to Santa.

## Math Fun! <br> By Jane Bissonnette

This is a fun activity to practice adding/subtracting positive/negative integers. You need a classroom set of playing cards. Most casinos will give a dozen decks of used playing cards (no charge) if you ask at their customer service desk.

Students should be grouped in groups of two or more. Have the students deal out as many cards as possible from the deck of cards so that each student has an equal number of cards. Put any extra cards aside.

Explain to the students that every black card represents a positive number, and every red card represents a negative number. For example, a black 7 is worth +7 , a red three is worth -3 . Aces have a value of 1 , jacks have a value of 11 , queens have a value of 12 and kings have a value of 13 .

To start the game each player places their cards in a stack, face down, in front of them. The player to the left of the dealer turns up their card, sets it in the middle and states the value of the card. For example, if the player turns up a black 8 , they say, "eight". The next player (clockwise) turns up their card, places it on top of the first card adding to the previous total. For example, if the second player turns over a red 3 then they say, "five" $(8+(-3)=5)$. Play continues until someone shows a card that, when added to the stack, results in the sum of 25 .

For an extra challenge, students could use subtraction only or try other operations. After the game ends, have students explain the rules in their math journals.


Fibonacci Poem - Brian Bilston
I
wrote
a poem
on a page
but then each line grew
to the word sum of the previous two
> until I began to worry about all these words coming with such frequency

because as you can see, it can be easy to run out of space when a poem gets all Fibonacci sequency
"Sometimes, in trying to study and understand mathematics, you come across a new way of looking at something, a new way of organizing something... You don't start out trying to be creative, though, at least I don't. You just start out trying to understand something.' David Blackwell

## Receive Clock Hours for PSCTM events!

If you attend one of our PSCTM events: Fall 2021, Winter 2022, or Spring 2022, you can receive one and a half clock hours per presentation. Just send an email to art@mabbott.org after the event.

## PSCTM's simplified process:

- Request clock hours for any one of the events
- Art will send you an evaluation form
- Complete evaluation form and email to Art
- Art will send you the clock hour form for the event that you attended
- Complete the clock hour form and keep it for your records. (Email Art if you have questions)

Follow PSCTM on social media! Share your lesson ideas, news with us, too! @PSCTM


Instagram
 $y$

Happy Santa Lucia Day! Enjoy this Scandinavian Santa Lucia Procession from Finland. The picturesque procession is a symbol of light in the darkness.

# PSCTM Zoom Virtual Fall Dinner, Monday, October 18, 2021 Mathematics for Human Flourishing 

## Dr. Francis Su, Professor of Mathematics, Harvey Mudd College

Dr. Francis Su, when asked 'why do math', says, "mathematics helps people flourish". Here are some of his thoughts from the presentation.


Beauty - Look for patterns everywhere, in art, music rhythm, culture. Call out elegant ideas, elegant reasoning, and applications of math. Make space for reflection - see striking patterns around you. Exploration - Be captivated by mystery, motivated by questions, unfazed by setbacks.
Embrace the virtues of imagination, creativity, expectation of enchantment.
How can you make your classroom a place of exploration and train your students to expect enchantment around every corner? Change dull problems to exploratory problems. Use open-ended questions. Showcase surprising, enchanting mathematics.
Truth - Cultivate the virtues of truth; a thirst for deep knowledge and investigation, thinking for oneself, thinking rigorously with circumspection. Teach handling the truth accurately; encourage deep knowledge and deep investigation. Make informed decisions, become innovators, critique uses of math/tech.
Power - Empower your students to see that you're not just teaching them skills, but ways to think and to be. Creative vs Coercive Power: creative power enables sense-making, multiplies power in subject and object Coercive power - limits the abilities of others for creative power.
Justice - Extend a welcome: How can you welcome those who feel excluded from math or don't see themselves as mathematical people? Learn about inclusive teaching and ask, "Who speaks and who gets shut down?" Affirm what students bring not lack. Recognize, value, affirm each student's unique contributions. Be concerned for the marginalized in mathematics and be willing to challenge the status quo.
You cannot separate the true practice of mathematics from what it means to be human. If you want to teach mathematics well, you have to connect it to the things people long for.

## A Challenge for us all

Believe that you and everyone can flourish in mathematics. Who will you read differently?
Have imagination for the sacred responsibility of teaching. To love another human being is to see each one as worthy of the beauty and joy that come from understanding. Who will you read differently?
> "You might think of math as a set of skills, like doing arithmetic or factoring a quadratic. But math is much more about building a set of virtues: like persistence, creativity, and a competence to solve problems you've never seen before."- - - Francis Su

## The Age/Birth year Reversibility Problem

An interesting thing happened on the way to my birthday this year; in October I turned 74. This feels old, but that wasn't the interesting thing. Surprising, I was born in '47 and I turned 74 (4-7 vs. $7-4$ ). I mentioned this to a friend who said: "Hey, I am the same! I am 83 and was born in ' 38 ." When I told my wife this coincidence, she asked if it had something to do with 11 . Interestingly, both $4+7=11$ and $3+8=11$. I decided to look for a birth year/age connection.

Let $\mathbf{d}=$ the tens digit and $\mathbf{a}=$ the ones digit of my birth year. Then my birth year would be $\mathbf{1 9 0 0} \mathbf{+ 1 0 d}+\mathbf{a}$. This year my age is the reverse of the two digits, $\mathbf{1 0 a}+\mathbf{d}$. To calculate my age from my birth year, I calculated the difference between birth year and the year 2000 and added 21to get my age this year. (Or just subtract birth year from 2021). My calculations for my age: $\mathbf{2 0 0 0} \mathbf{- ( 1 9 0 0 + 1 0 d + a ) + 2 1}$. My age this year is $\mathbf{1 0 a}+\mathbf{d}$.

The two ways to write my age:


$$
\begin{aligned}
& 2000-(1900+10 d+a)+21=10 a+d \\
& 2000-1900-10 d-a+21=10 a+d \\
& 121-10 d-a=10 a+d \\
& 121=11 d+11 a \\
& 121=11(d+a) \\
& 11=(d+a)
\end{aligned}
$$

(If we simplify the left) combining like terms adding $10 \mathrm{~d}+\mathrm{a}$ to both sides factoring out the 11 divide by 11

The sum of the digits of my age and my birth year add to 11 just as my wife predicted. Anyone whose birth year adds to 11 is the reverse of their birth year in age this year. I was born in 47 and I am 74. My friend was 83 and was born in 38. If you were born in1956, then in 2021 you were 65 . And if you were born in 92 , then you are 27 and so on. So cool.

But what if your digits don't add up to 11? Will there be some year when your birth year and age will be in reverse? I decided to work backwards from my solution to see if we can find the year when your age and birth year are reversed.

Start at the end: $\mathbf{s u m}=\mathbf{d}+\mathbf{a}$. In my case it was 11 . But let's make that sum something different. Say $\mathbf{d}+\mathbf{a}=\mathbf{1 5}$. You could have been born in 1987. When would you be 78 years old? If I work backwards, it should look like this: 15 $=\mathrm{d}+\mathrm{a}$. Using my process, to get there I divided by 11 . So, let's multiply by 11 to get $11 * 15=11(\mathrm{~d}+\mathrm{a})$. If we expand, we get $\mathbf{1 6 5}=\mathbf{1 1 d}+11 \mathrm{a}$. Now let's subtract 10 d and 1 a from both sides to get: $\mathbf{1 6 5 - 1 0 d - 1 a = 1 0 a + 1 d}$.
Next 165 can be expanded to 2065-1900 and our equation is: 2065-1900-10d-1a = 10a + 1d.
So, in 2065 you would be 78 if you were born in 1987, or 96 if you were born in 1969.
Looking for patterns I tried to determine when my little sister would have her reversible age/year event. She was born in 1949. The sum of her digits is 13 . She will have to wait until she is 94 in 2043. My older brother who was born in 1945, had his special year in 1999 when he was 54.

So, if the sum of the digits of your birth year is (a), and you work the process backwards the year of reversibility is (b). I have created a table for all possible sums of birth years. Notice that you can have a sum of 0 up to a high of 18. There are other patterns within this table, but I will leave them for you to find...enjoy!

| (a) | 11 times | (b) |  |
| :---: | :---: | :---: | :---: |
|  | the Sum | year ending |  |
| $\mathrm{d}+\mathrm{a}=0$ | 00 | 00 | NW2021 |
| $\mathrm{d}+\mathrm{a}=1$ | 11 | 11 | Trivia Challenge |
| $\mathrm{d}+\mathrm{a}=2$ | 22 | 22 | (1) |
| $\mathrm{d}+\mathrm{a}=3$ | 33 | 33 | - |
| $\mathrm{d}+\mathrm{a}=4$ | 44 | 44 | Check out these 5 questions from the |
| $\mathrm{d}+\mathrm{a}=5$ | 55 | 55 | Thursday night Trivia Challenge at the BC |
| $\mathrm{d}+\mathrm{a}=6$ | 66 | 66 | Northwest Math Conference! |
| $d+a=7$ $d+a=8$ | 77 88 | 77 88 | 1.What is the number that describes how |
| $\mathrm{d}+\mathrm{a}=9$ | 99 | 99 | many letters are in it? |
| $\mathrm{d}+\mathrm{a}=10$ | 110 | 10 | 2 . Which is the only number that is twice the |
| $\mathrm{d}+\mathrm{a}=11$ | 121 | 21 | sum of its digits? |
| $\mathrm{d}+\mathrm{a}=12$ | 132 | 32 | 3. What is the first whole number to contain |
| $\mathrm{d}+\mathrm{a}=13$ | 143 | 43 | the letter "a"? |
| $\mathrm{d}+\mathrm{a}=14$ | 154 | 54 | 4.Which number is an anagram of OVER |
| $\mathrm{d}+\mathrm{a}=15$ | 165 | 65 | FIFTY? |
| $d+\mathrm{a}=16$ | 176 | 76 |  |
| $\mathrm{d}+\mathrm{a}=17$ | 187 | 87 | spelled in alphabetical order? |
| $\mathrm{d}+\mathrm{a}=18$ | 198 | 98 | spelled in alphabetical order? |

BCAMT The BCAMT proudly presents..
Britsh Columbla Association
of Mathematics teachers

60th ${ }^{\text {th }}$ Northwest Mathematics Conference
October 21-23, 2021

| Virtual Conference on Zoom | Thurs, Oct 21: Virtual Math Social Evening |
| :---: | :---: |
|  | Fri, Oct 22: Opening Keynote - Sessions - AGM |
| Early-Bird Registration Now Available! | Sat, Oct 23: Sessions • Closing Keynote © 11:15 am |
| Keynotes: Francis Su \& Chrissy Newell <br> Featured Speakers: Nat Banting • Cathy Bruce • Molly Daley - Graham Fletcher - Robert Kaplinsky Jenna Laib - Peter Llledahl \& Thinking Classroom Educators • Cathy Marks Krpan - Fawn Nguyen Cart Oliver • At Overwilk - Marian Small - Christina Tondevold - Theresa Wilts • Steve Wyborney BC educators from the BC Numeracy Network, the Indigenous Mathematics K-12 Network. and the BC Reggio-Inspired Mathematics Project ... and morel |  |
|  |  |

## www.bcamt.ca/nw2021

## Engaging All Learners in Doing Mathematics -

## Fawn Nguyen

Fawn's criteria for a good task: Non-routine, simply stated, multiple solutions, you enjoy working on it Making curricular tasks more non-routine:

Consider starting with the last problem together.
(Never waste a good problem; the solution path is less obvious, ensures that everyone gets to be challenged, allows students to work together.)

Stop telling - do more notice and wonder.

Reach for content from the next unit or the next grade level

All modeling tasks are problemsolving tasks

Play games to find the winning strategy.
Problem solving fosters the 8 Mathematical Practices
Look for and express regularity in repeated reasoning
Problem solving builds strategies of: Charts \& diagrams, Venn diagrams, spreadsheets, interactive tools, working backwards, think 1, algebra, function machine, pattern seeking, do a simpler problem, act it out, wishful thinking, multiple representations

## Points of View: Building Joy, Wonder, and Connection Dr. Francis Su, Harvey Mudd College <br> "Seeing an idea from multiple perspectives (including the vantage point of others) is a virtue that will serve students well in any area of life. Seeing our own students' points of view will enrich our own understanding and bring us wonder and joy, too."

## Shifting points of view

a motif in mathematics - paradox, reconciliation, challenge. It evokes awe, compels study, motivates creativity.
Show more than one method to do something!


Pythagorean proofs can be done by dissection, paper folding, algebraic reasoning, etc. There are hundreds of proofs, and this gives you an opportunity to discuss the fact that the theorem was known well before Pythagoras and was discovered by many cultures. Who gets credit for math discoveries? Why?
Aha! The joy of an elegant idea and seeing a point of view that makes the problem easy to solve. Curate your own collection of interesting problems. Set a goal: find one new problem a month. Skim puzzle books (Martin Gardner books are a great place to start)

## Points of view that reveal a paradox

A classic Geometry problem - how is it possible to rearrange the four colored pieces and add an extra square to the area? How does this happen?


## Points of view that provide perspective on a subject

Algebra: "the art of solving many problems at the same time."
Statistics: "is learning how to be a good detective with data", "the opposite of probability. Probability takes a fair coin and asks about its outcomes. Statistics takes the outcome and asks: is the coin fair?" Calculus: "is the study of rates of change", "tells you how to cut things up and put them back together", "approximates complicated things by simple things".
Not just our points of view - our students need space to cultivate their points of view.
Space for dialogue, empathy, risk-taking, ownership; space for joy and wonder, flipping back and forth between points of view, making new connections.
Our role as teachers: Coach students to listen to each other, respect each other, affirm each other.
We need to listen to our students' points of view.

## Problem Solving is what you do when you don't know what to do. -- - Fawn Nguyen

## Three Engaging Methods to Uncover and Fix Hidden Student Misconceptions

Robert Kaplinsky explained his three engaging methods which are:

## Open middle

- a "closed beginning" meaning that they all start with the same initial problem.
- a "closed end" meaning that they all end with the same answer.
- an "open middle" meaning that there are multiple ways to approach and ultimately solve the problem.
Using the digits 1-9 at most one time each, place a digit in each box to create a fraction that is as close to one as possible.

Open Midalle problems
Source: Peter Morris on openmiddle.com

Using the digits 1 to 9 at most one time each, place a digit in each box to make the greatest possible sum.
Open Middle problems


## Always, Sometimes, Never:

How do you prove something is: Always true? Sometimes true? Never true?
Here are some lessons learned about Always, Sometimes, Never
Better in small groups,
You can jigsaw groups,
More issues come out during discussions,
You can talk about sufficient reasoning
Truth, truth, lie - (here is an example to use with this method):
Adding two negative numbers always gives you a negative sum,
Subtracting two negative numbers always gives you a positive difference,
Multiplying two negative numbers always gives you a positive product
Here are some lessons learned about Truth, Truth, Lie:
It is a huge reality check, is easier to answer, and is smoother later in the chapter

## Summary Chart



Building Belonging in Math Class: Beyond the Invitation Closing Keynote - - - Chrissy Newell

"How do we support student "belonging" within an educational system that never intended for Black, Brown, and poor children to belong? Dr. Jamaal Sharif Mathews, University of Michigan


Chrissy started by sharing a tweet of hers that has gone viral. It is a picture of her Kindergarten son and his response to Distance Learning (day $4 \ldots$...).
Chrissy is also well known for \#MathGals. From the website:
The \#MathGals Story
"In the summer of 2018, Chrissy and her daughter, Cora started reading about inspirational women in mathematics in the book, Power in Numbers: The Rebel Women of Mathematics by Dr. Talithia Williams. They decided that everyone should know these women's names, and \#MathGals was born! They design shirts that honor past \& present \#MathGals, inspire future \#MathGals and start conversations to include and inspire girls to love math."

## Math Identify

Others' perceptions:
What will my classmates think if I'm wrong? What will my classmates think if I'm right? What does my teacher think of me" Am I good enough in math? Will I ever be good enough in math? What will others think of me if I struggle? What will others think of me if I succeed?
Teachers as "identity influencers":
Provide safe and brave learning spaces. Tell our math stories \& invite students to do the same. Redefine mathematical success. Prioritize student voice. Work on our own math identities. Monitor identity formation.
Redefine mathematical success: (click for YouCubed pdf)
Everyone can learn math to the highest levels. Mistakes are valuable.
Questions are really important. Math is about creativity and making sense. Math is about connections and communicating. Math class is about learning not performing. Depth is more important than speed.
Tell our math stories \&
invite students to do this, too.
\#MathGals Call to Action
Be intentional about the messages girls receive about math.
Design opportunities for girls to do math together.
Tell girls they belong!


## Sophie Germain (April 1, 1776 - June 27, 1831)

Sophie Germain is one of my favorite heroes of mathematics. She was born in Paris in 1776 to a well-to-do family. During the French Revolution, which started when she was 13 , her family kept her indoors to protect her from the street mobs chasing and killing aristocrats and those suspected of being aristocrats. She spent a lot of time in her father's library and was captivated by the legend of Archimedes' death. Purportedly, he was so engrossed in the study of a geometric figure in the sand that he failed to hear the orders of a Roman soldier, who killed him for his insolence. Her fascination led her to study mathematics herself and she was hooked. Her parents were alarmed at her unladylike interest in mathematics and tried to make her stop. When they caught her sneaking into the library at night, they started taking her clothes away after she went to bed. When that didn't work, they stopped heating her room at night. They finally relented when they found her wrapped in a blanket, asleep at her desk over a textbook with ice in the inkwell.

Freed at last to study what she wanted, she soaked up Mathematics through differential calculus by the time she was 18. The Ecole Polytechnique opened in 1794 to "train mathematicians and scientists for the country." Women were not allowed to enroll, but Sophie could sit outside the doors of the classrooms and borrow the notes of male students. Under the pseudonym of M. LeBlanc, she submitted a paper to one of the professors, who was so impressed that he wanted to meet the author. The professor, Joseph Lagrange, was amazed that the author was a woman but was eager to be her mentor anyway. With his support, she was able to participate officially in the world of mathematics.

In 1804, Sophie began corresponding with the German mathematician Carl Friedrich Gauss, often called the Prince of Mathematics. She used the subterfuge again of writing as M . LeBlanc for fear that the great mathematician would ignore the writings of a woman. In 1807, the French army invaded the region where Gauss lived. Sophie's father, head of the French National Bank, was friends with the general in charge of the army that was to capture the city. Sophie implored the general to find and save Gauss from Archimedes' fate. Gauss's next letter to Sophie expressed astonishment at the protective interest of a woman he had never heard of, which prompted Sophie to admit her real identity in a subsequent letter.

Sophie went on to make landmark discoveries in number theory and analysis, earning the respect of the other renowned mathematicians of her era. The University of Gottingen voted to award her an honorary Doctor of Mathematics, but she died of breast cancer at age 55 before she could receive it. Joe Frost

## It matters little who first arrives at an idea, rather what is significant is how far that idea can go. - - Sophie Germain

## Algebra is but written geometry and geometry is but figured algebra. Sophie Germain

(On Sophie Germain) When a person of the sex which, according to our customs and prejudices, must encounter infinitely more difficulties than men...succeeds nevertheless in surmounting these obstacles and penetrating the most obscure parts of (number theory), then without doubt she must have the noblest courage, quite extraordinary talents, and superior genius. - - Carl Friedrich Gauss

## How Civil Rights Pioneer Bob Moses Changed Math Education

Civil rights leader and education pioneer Bob Moses (1935-2021), who died in late July, looked at his evolving mission through the lens of citizenship and educational processes needed to achieve and enjoy its blessings.

More than a decade after the 1965 Voting Rights Act, Moses realized that the next frontier was economic justice, and that fluency in math and science was the springboard for peoples of color and low-income whites to be full citizens, fully enfranchised - the civil rights issue of the $21^{\text {st }}$ century.

A MacArthur Foundation Fellow 1982-1987, he used his fellowship to begin the Algebra Project, which uses mathematics as an organizing tool for quality education for all children in America.

In the Algebra Project, students move through five steps: direct experience, pictorial representation, intuitive expression, structured expression, and symbolic representation. Starting with the kids' shared experiences, "we get them to reflect on these drawing on their common culture," Moses wrote in "Radical Equations," "then to form abstract conceptualizations out of their reflections, and then to apply the abstraction back on their experience."

"Don't think
necessarily of
starting a
movement. Do
what you think
actually needs to
be done, set an
example, and
hope your
actions will click
with someone
else." - - Bob
Moses

It's easy to do anything in victory. It's in defeat that a man reveals himself. - - Bob Moses
The questions that we think face the country are questions which in one sense are much deeper than civil rights. They're questions which go very much to the bottom of mankind and people. They're questions which have repercussions in terms of a whole international affairs and relations. They're questions which go to the very root of our society. What kind of society will we be? - - Bob Moses

The most urgent social issue affecting poor people and people of color is economic access. In today's world, economic access and full citizenship depend crucially on math and science literacy. I believe that the absence of math literacy in urban and rural communities throughout this country is an issue as urgent as the lack of registered Black voters in Mississippi was in 1961. - - Bob Moses

## Get Ready for the Northwest Math Conference in Tacoma in 2022!

## ワWM. math: you are invited

PSCTM is excited to partner with the Washington State Math Council for the 2022 NW Math Conference. The conference will be returning to the Tacoma Convention Center October 13-15, 2022.

We will be focusing on strands of inviting all voices into math, addressing diversity and inclusion, planning for equity and access, inviting in through play and curiosity.
We plan to provide several ways to participate through registration options (Saturday only, Keynote streaming) and intentionally creating space for educators to connect. We will have a slightly longer and robust program on Saturday for 'Saturday only' participants.
If you are interested in helping, contact Maryke at: mhaynes @everettsd.org, (206) 351-3095
Maryke Haynes (co-chair, logistics)
KEYNOTES: Dr. Robert Q Berry, Laila Nur, Breakfast: Alison Hintz and Elham Kazemi. Our Ignite program will be all classroom teachers!

## Francis Su @mathyawp•21h

Reminder: teach students to use words in writing math. An equation is often ambiguous without words to introduce it. " $A=7$ " could mean:
"Let $A=7$ " (assign a value)
or
"Thus A=7" (follows from something)
or
"I claim A=7" (an assertion).
These mean different things. \#iteachmath

Save the date!
PSTCM Dinner Monday, May 9, 2021, on Zoom will feature Timea Tihanyi!

Tihany is a Teaching Professor in the Interdisciplinary Visual Arts program at the University of Washington. She is the founder and director of Slip Rabbit, a unique mentoring space for experimentation and learning at the intersections of art, design, architecture, science and engineering. Slip Rabbit is the first technoceramics studio in the Pacific Northwest.

## The Out of Sight, Out of Mind Blues! Jane Hunter

As the winter holiday looms closer and kids are getting restless, every teacher experiences ...the Out of Sight, Out of Mind Blues. You know the idea, "Do I give them a homework packet because know they will forget the last few months of instruction....and then be labeled... Worst teacher of the year? Or can I get creative and somehow trick them into doing the work and practice I want them to remember during the break?" So, I pondered...what could I do so that they might have some fun and actually do the work? As a former leadership teacher, I know that competition always helps with motivation. This year I am teaching at an alternative high school, and I know my students aren't always too eager to compete with their classmates. But, what about competing with themselves?
It turns out the internet is full of great sites that are fun, and kids can actually best their own times or scores!
Here are some ideas that might help you - geared for students at all levels:
Escape Rooms: https://www.survivingateacherssalary.com/free-digital-escape-rooms/



## Desmos Labs: https://teacher.desmos.com/

It's pretty easy to create a matching page. You can even add in some fun non math facts that match up.


Quizlets: https://quizlet.com/
These are amazing! You give them the information and it automatically creates flashcards, and games around the information you want the kids to remember.


## Kahoot: https://kahoot.com/schools-u/

For free, you can create easy games that the students can sign on and do during break on their own time. Ask them to beat their own time for extra points if you need the competition.

$$
\mathrm{k}!
$$

Con


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New: Display questions and answers on players' devices in live kahoots
Make a live kahoot experience more inclusive and accessible for all learners!
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New: Display


Allowing your students some freedom to have a bit of fun and review during break can make all the difference that first week back. Have fun and be the coolest teacher. But, most importantly, relax during the break knowing things will be easier when you return in January. - Jane Hunter

> "The result of a consistent and total subssitution of lies for factual truth is not that the lies will now be accepted as truth, and the truth will be defamed as lies, but that the sense by which we take our bearings in the real world ... is being destroyed." - - - Hannah Arendt (1967)```

