



# Puget Soundings



Angela  
modeling a  
math mask

*I've learned that people will forget what you said, people will forget what you did, but people will never forget how you made them feel. - Maya Angelou*

**June 15, 2020**

**Congratulations 2020 Graduates!**

Editor: Joyce Frost  
(frostjoycee@gmail.com)

## President's Letter - Traci Cotton

Dear PSCTM members,

As we continue to navigate through these challenging times, we remain united in our efforts to support one another in crisis. The Puget Sound Council Teachers of Mathematics advocates for equity and access in the mathematics classroom and beyond. We continue to educate ourselves as we collaborate with our fellow educators to provide opportunities for students, and teachers, to share their voices.

We thank you for your commitment to our common purpose ensuring quality mathematics for all students. We truly are all in this together.

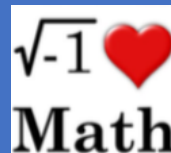
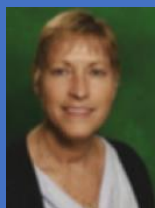
Wishing you well,

**Traci Cotton,**

PSCTM President, Social Media



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



## LESSONS LEARNED IN 2020

*There are so many things that have happened over the last couple of months that I know everyone sees the world a little differently now. For our graduation celebration this week, I went looking for some inspirational quotes to describe some special seniors. What I found was quotes I had read hundreds of times, but which now had new meaning for me. I found others I had forgotten about that were quietly guiding my journey. I tried to pick one, but I think if there is ever a time that deserved more than one quote, it was the last three months.*

***Vulnerability is the birthplace of connection and path to the feeling of worthiness. – Brene Brown***

*I have read, watched and listened to Brene many times, and every time I get a little something different. This time, it was a reminder that I needed to be vulnerable first. None of us had words to describe how we were “supposed” to feel, first with COVID-19 and the unrest it caused and then with the Black Lives Matter demonstrations and weight it carries for all of us. Learning to share with my colleagues and students how I was really feeling (or that I didn’t know how to feel) was a huge personal growth for me. It is ok for us not to be ok. Its ok to not know what to think. Its important that we take a moment to learn. Vulnerability was my greatest personal growth over the last few months.*

***I've learned that people will forget what you said, people will forget what you did, but people will never forget how you made them feel. – Maya Angelou***

*I miss surprising my students. I miss being surprised by my students. I miss starting a math fight. I miss seeing the face of a student when they have a breakthrough. I miss the energy of a group of people learning together. If my personal growth was vulnerability, then professional growth was the understanding of just how important emotions are to engagement. Behavioral engagement was easy to see in this time. Cognitive engagement was a hurdle we could work on through refining our questioning techniques and choosing the right tool. Emotional engagement was next to impossible to consistently achieve or measure.*

***The ‘occasionally remarkable’ moments shouldn’t be left to chance! They should be planned for, invested in. They are peaks that should be built.” – Chip and Dan Heath***

*As a PLC team we decided to do a book study with **The Power of Moments** by Chip and Dan Heath. We realized that in this “disconnected” time we would need to manufacture the moments to help our students feel peaks. So, we adapted our PBIS Matrix for the Digital Learning World and created a recognition program. Students were recognized for engagement with a surprise doorstep delivery from a (masked and gloved) team of staff members with a poster and custom sunglasses. It was as fun for our staff as our students! We used iReady to create opportunities for students to support their learning gaps and made up “milestones”. When students hit these milestones, they would be sent an Achieve-meme-ment, such as, “You have completed as many minutes in iReady as Anna Kendrick has spent singing in movies” (321 minutes). Both programs were completely manufactured peaks, but a way to break up the endless days of staying home for both staff and students.*

***It has been very educational and enjoyable to have as much time and freedom as we want within a very confined box. I work much better with confinement. It is more fun to try and play within the box. – Seth Rogen in an interview on Armchair Expert***

*Creativity was almost my Achilles heel during this time. I had too much time and too many options. I soon learned, that every resource outside our platform (we used Canvas) decreased the likeliness a student would do it and that I would get an accurate assessment of their knowledge. When I decided to live “within the box” of Canvas, I had more successful engagement. I accessed the instructional routines they were familiar with (Notice and Wonder, Which one doesn't belong?, Estimation) using a discussion board. I gave them sentence starters for a Claim and Reasoning prompt. I just asked them what they knew or why something was helpful, for example, “How does a square root help us solve an equation?”. The more I stayed with-in the Canvas box, the more I learned about their understanding.*

*The Stay-At Home Order was hard, and we don’t entirely know what Fall will look like. Also, ahead of us is a humbling battle to address inequity in our math programs and to learn tools to have courageous conversations in our anti-racist journey. With our ability to be vulnerable, our understanding of powerful moments and emotional engagement, and the belief in our ability to work within our constraints, there isn’t another group of colleagues (in my department, school, district, state and country) that I would want to move forward with. With that, I have never looked forward to the last day of school more. May your summer be everything you need it to be.*

***Maryke Haynes***



## MEDIA AVAILABILITY



June 11, 2020 | 11:30 am

Superintendent Reykdal will address questions from the media regarding OSPI guidance on school reopening in the fall.



Washington Office of Superintendent of  
PUBLIC INSTRUCTION

### [Washington State Superintendent of Public Instruction Chris Reykdal](#)

Listen to Superintendent Reykdal answer media questions about the new guidelines.

### [Reopening Washington Schools 2020 District Planning Guide](#)

Read the 58 page document on reopening.

*"Never be limited by other people's limited imaginations...If you adopt their attitudes, then the possibility won't exist because you'll have already shut it out...You can hear other people's wisdom, but you've got to re-evaluate the world for yourself."* - Mae Jemison, first African American woman astronaut



**[Making Music at a Distance](#)** - read this article to see how a UW music professor pivoted to online teaching *"Timothy Salzman had big plans for the UW Wind Ensemble for 2020. He had organized the 54-member ensemble's first-ever tour of South Korea, with performances scheduled in three Korean cities over spring break. Then the coronavirus hit and the trip was canceled. Before long, Wind Ensemble on-campus rehearsals and concerts were canceled as well, as all UW faculty were required to teach their courses remotely."*

### **[Protecting Lives with 3-D Printers](#)**

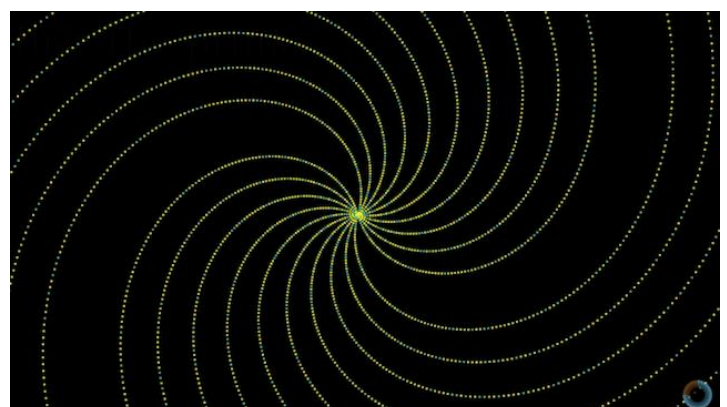
The emails started swirling in mid-March. Health care workers in Seattle desperately needed personal protective equipment (PPE) while treating COVID-19 patients, but there was a delay in receiving PPE from commercial sources. After a local designer designed a face shield that could be produced on 3D printers, UW faculty and staff with 3D-printing capabilities were quickly recruited by email to address the short-term PPE needs of UW Medical Center and Harborview Medical Center. "When I heard about this, I immediately volunteered," recalls Timea Tihanyi, senior lecturer in the School of Art + Art History + Design (SoA+AH+D). "I have the necessary equipment that could play a role in saving people's lives. It was a no-brainer." (**Recall that Timea was a 58th NW MathConference speaker!**)

### **[Fighting Covid-19 with Math](#)**

Aleksandr Aravkin, associate professor of applied mathematics, could use a day off. Since March he and colleagues at the Institute for Health Metrics Evaluation (IHME) have been immersed in coronavirus research nonstop, providing mathematical modeling and scientific computing expertise to help countries around the world understand and forecast the trajectory of the COVID-19 pandemic.

**Presumption should never make us neglect that which appears easy to us, nor despair make us lose courage at the sight of difficulties. - - - Benjamin Banneker**

**Math Beauty: [Why Do Prime Numbers Make These Spirals?](#) - Have a listen for an inspirational moment!**



## Graduate Student Solves Decades - Old Conway Knot Problem

Enjoy this article from the [May 19, 2020 Quanta Magazine](#)

- It took **Lisa Piccirillo** less than a week to answer a long-standing question about a strange knot discovered over half a century ago by the legendary **John Conway**.
- The Conway knot is a mathematical knot with 11 crossings discovered by mathematician John Horton Conway. The knot is so famous that it decorates the gates of the Isaac Newton Institute for Mathematical Sciences at Cambridge University.
- [Piccirillo's proof](#) appeared in Annals of Mathematics in February. The paper, combined with her other work, has secured her a tenure-track job offer from the Massachusetts Institute of Technology that will begin on July 1, only 14 months after she finished her doctorate.
- Piccirillo's proof "fits into the mold of short, surprising proofs of elusive results that researchers in the area are able to quickly absorb, admire and seek to generalize — not to mention wonder how it took so long to come up with," Greene wrote in an email.

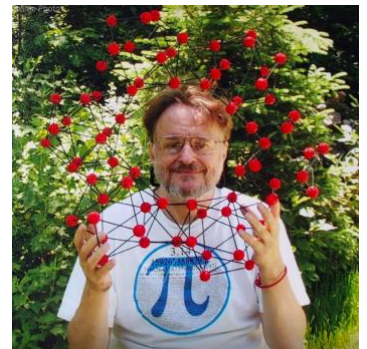


One of Dr. Piccirillo's former professors cited 'creativity' as one of her core strengths as a mathematician.

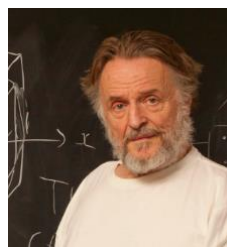


Famous painter, **Dick Termes**, posted this about John Conway. . . (John is pictured outside Dick's studio in Spearfish, South Dakota)

"John Conway, after we finished this beautiful structure in my gallery. One of the greatest mathematisions ever, taken by coronavirus."



**John Conway**, who [died of COVID-19 April 11, 2020](#), was famous for making influential contributions to one area of mathematics after another.



### John Horton Conway Remembered - December 26, 1937 - April 11, 2020

John Horton Conway, who died April 11 of coronavirus, was a product of Liverpool about the same time as the Beatles. He went on to change mathematics much like they changed music, but with a broader brush. It is estimated that 1/4<sup>th</sup> of all computers on Earth had a copy of his "Game of Life" at its popularity peak, and his prodigious output of serious and recreational mathematics ranges across many topics related to geometry. He was famous as a lecturer and showman and delighted in holding forth in the common area of the math department at Princeton, as his office(s) were too crowded with toys, games, and papers to be used.

Conway loved teaching so much that he would spend his summers teaching middle and high school students at the Canada/USA Math Camp. His collaboration with Martin Gardner made him famous, but his profound insights earned the fame. His "Free Will Theorem" seems to answer Einstein's objections to quantum mechanics and perhaps, explain our own free will. Richard Borcherds, one of his Ph.D. students, earned the Fields Medal for proving Conway's Monstrous Moonshine conjecture, regarding an elusive symmetry group that lives in 196,883 dimensions. Stark Ledbetter, who had Conway as a senior thesis advisor from 2008 to 2009, still puts into practice three bits of advice Conway gave her: design your notation so that it's easy to use; make even small edits to improve your writing if you're given the chance; and give interesting names to new concepts so people will remember them. After graduation, she took nine years off from mathematics to pursue music, but now studies in a Ph.D. math program at the UW. "I always thought I would meet him again and tell him I actually am back to doing math," she said. Find an excellent post describing his [life and exploits](#) by Elizabeth Landau or his [obituary by Siobhan Roberts](#), his biographer, or a truly fascinating interview with him about [inventing the game of life](#). - - - **Joe Frost**



## Making a Routine out of Instructional Routines

I am what you call an “early adopter”. Show me something new and novel, convince me why it is good for kids, and I will try it the next day, the day after, and a week later and then get distracted by the next new and novel routine. Before the end of the month I have been distracted so many times that I forget about all the good things each does.

This year, I decided to take a different approach: I made a routine out of the routines. As a learning team, we are focused on student engagement, with a specific start of the *Notice and Wonder* routine. I get a little bored doing the same thing every day, so I created a schedule that forces me to think about engagement around instructional routines. Then I connected them to the *Math Practices*, which I think are amazing, but never bring up as much as I wish.

So, I created “rules” for myself for entry tasks with adorable names for each day: Making Sense Mondays, Tell Us More Tuesdays, Wondering Wednesdays, I Think It Might Be... Thursday, reFlection Friday. I have the “Cute Name” on the entry slide for the powerpoint, on their Entry/Exit Task Sheet (that I collect daily) and next to the date on the whiteboard. In a short time, the students know what to expect each day!

Day	Engagement Goal	Routines that could work
Making Sense Monday	Make Sense, Identify patterns, Ask questions	Notice and Wonder, Visual Patterns, Which one Doesn't Belong
Tell Us More Tuesday	Explain Thinking, Construct Arguments	Dot Talks, Number Talks, Which one Doesn't Belong, Debate Math
Wondering Wednesday	Make Sense, Identify patterns, Ask questions	Notice and Wonder, Visual Patterns, Which one Doesn't Belong
I think it might be... Thursday	Use appropriate tools, Make Sense	Estimation 180
reflection Friday (OR Fascinating Friday)	Identify learning strengths and weaknesses (OR Make Sense, Identify patterns, Ask questions)	Success Criteria from Priority Standards, Goals sheets, OR Notice and Wonder

Forcing myself to do the routines by schedule really made me consider the advantages of each and how they could contribute. Regular use allowed me to throw a “*notice and wonder*” or an “*estimation*” structure informally into the lesson seamlessly. The routines also made a routine out of looking at the *Math Practices* and allowed students to have experiences that they could look back on as evidence of using the Practices. If you have more routines or cute new names for next year, I would love to hear it! - - - **Maryke Haynes, [mhaynes@everettsd.org](mailto:mhaynes@everettsd.org)**

## Summer Vacation

Those two words present mixed emotions. Summer vacation means saying goodbye to students, colleagues, and to our daily routines. It's the time of year where we take a step back and reflect on our efforts of the past nine months and make notes about what we hope to continue or change in the coming year.

We find that we have time to take better care of ourselves and enjoy our hobbies, friends and family. Many educators find that it takes time to simply unwind before we can enjoy our break. Self-care is something we should focus on all year long to provide us with the energy to give to the causes that are dear to our hearts. As you begin to think about all the instructional strategies you plan to implement in the fall, consider these quick tips for self-care that will become habits for the new year.

### What do I do for self-care?

2015-03-18c

- Get plenty of sleep
- Enjoy sunshine
- Cook
- Write or draw (think out loud)
- Talk to myself
- Cuddle cats
- Walk or bike (esp in a park)
- Tidy
- Read
- Read about people whose lives are more complicated
- Garden
- Get a hug
- Talk to select people

- *Make a list of the things you like to do that feed your heart, your body, your mind and your soul.*
- *Get out your calendar and make time for yourself EVERY day.*
- *Give up all guilt about taking time for yourself, or for taking time to be with people who boost your energy and joy.*
- *Keep a gratitude journal.*
- *Ask for help when you need it.*
- *Laugh and learn from your mistakes.*

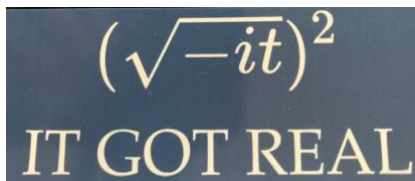
Learn more at

<https://www.positivediscipline.com/articles/self-care-teachers>.

**Traci Cotton, PSCTM President**



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



**Millie Johnson, Western Washington University Math Professor**

This little graphic with the  $(\sqrt{-it})^2$  has several mathematical issues. Can you spot them?

1) 'it' could be the product of imaginary number "i" and variable t. If so, result isn't real, unless t is a complex conjugate, -i).

2) Even if NOT (1), if either i or t are imaginary, same issue, barring conjugates.

3) Even if not (1) or (2), if both i, t are real #'s and either or both are zero or if exactly one is less than 0, result is real.

This probably sounds picky, but not to me. One of the shortcomings of variables is students often don't consider these options. SO often students will look at say, pt (a,b), and assume  $a, b > 0$ .

This leads me to something a lot of readers might not think about which is, visually, what does a sqrt of a complex number mean? How many square roots are there for a complex number? cube roots, etc? All can be seen visually.

**Milli e** 0.0027182818.... forever more - A. Richardson

## Six Strategic Pen-and-Paper Games (from a Strange and Bottomless Mind)

At the left is a very cool thought from [Math with Bad Drawings](#) (Ben Orlin). Some super fun strategy games like nim and magic squares, only better! Not only are these games fun, but they can be played online with students, friends, or family while home bound. - - - **Milli e**

### Who are Mathematicians?

How do Mathematicians work?

- **Mathematicians** are curious.
- **Mathematicians** ask questions of themselves and the teacher.
- **Mathematicians** look for challenging problems and work to figure them out.
- **Mathematicians** change their ideas and strategies to come up with new ones ... and then may change their ideas and strategies again.
- **Mathematicians** persevere.
- **Mathematicians** make mistakes and keep on working, thinking, and learning.
- **Mathematicians** talk to other mathematicians and ask them questions in order to learn and understand.
- **Mathematicians** need a lot of time to think, think, and think some more.
- **Mathematicians** do not always agree and may respectfully disagree with another mathematician.
- **Mathematicians** work together.
- **Mathematicians** explain their ideas and thinking and listen to the ideas and thinking of other mathematicians.

**We are all Mathematicians!**

Adapted from Math Exchanges: Guiding Young Mathematicians in Small-Group Meetings (Wesley, 2011)



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**Always remember that just because someone says, 'you can't', that doesn't have to stop you. You might have to go in a different direction, and and it might take you a little longer, but you CAN achieve your dreams.**

**Raye Montague**

## 2020 Graduation Advice from *President Barack Obama*

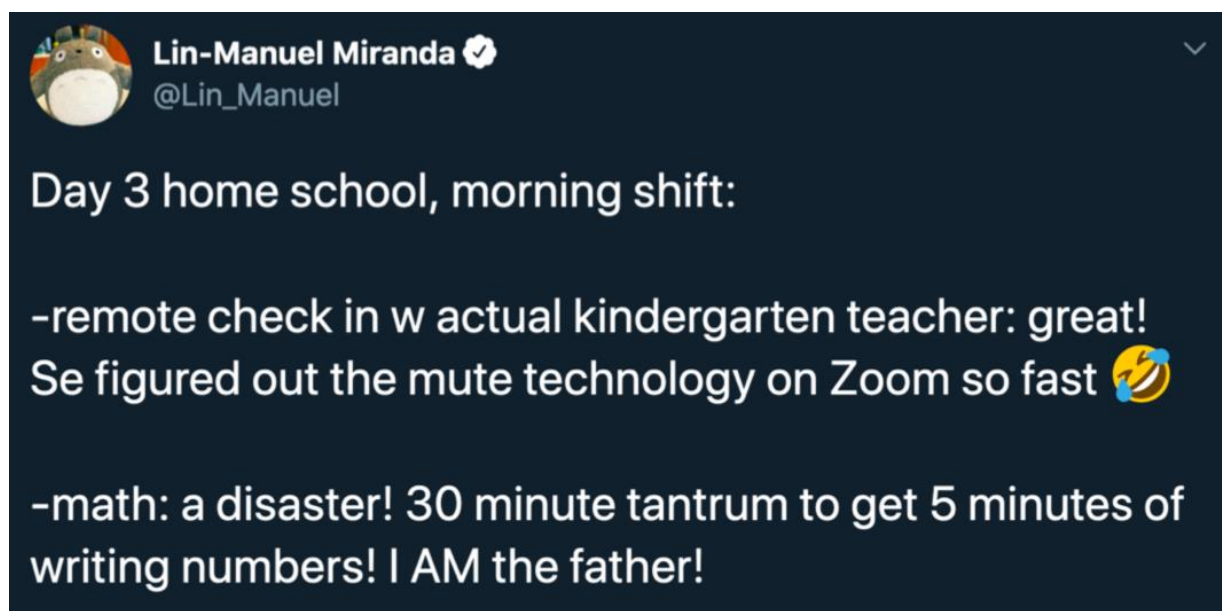
1. *Don't Be Afraid*
2. *Do What You Think is Right*
3. *Build a Community*

*For a fabulous treat of one of the best graduation shows ever, watch "[Dear Class of 2020](#)" including many teary, spectacular moments!*



## Supporting Math at Home, **Dan Finkel**, Math For Love PSCTM May 18, 2020 Presentation

"When the pandemic started and kids stopped going to class...  
I got worried and started blogging". Overnight, we were all in new territory.





The PSCTM shifted gears and planned a Zoom virtual presentation. Dan Finkel changed topics to one on all of our minds, *Supporting Math at Home*. We cancelled the dinner catering, chose a Zoom host and account for the presentation, divided up roles, invited teachers we knew, and had faith this would all work out! When the dust settled, we had 168 people sign up for our May 18th presentation! Whew! With that many, should we attempt break out rooms? Dan said, "yes"! In the end, we had about 90 people participate, and it was amazing! What a treat to be in a breakout room with a teacher from Australia who was commenting on how she was trying to prepare to restart classes in 3 weeks. Through the chat feature, we had people check in with their location and grade level. We had teachers from the East Coast, Whidbey Island, Nanimo, B.C., Tacoma, Seattle, Toronto, Melbourne, Australia, Saskatoon, Canada, California, North Carolina, Atlanta, Chicago, Ohio, New York, Minnesota ... It was so poignant to realize that really, we all were living out this strange new normal without a clue what really worked best and with very little preparation for any of it. For me, the best part of Dan's presentation was his wise words of calmness and acceptance. Here are a few that really stuck with me.

### Communicating to parents:

1. Be gentle with yourself and with them.  
We're all experimenting right now.  
We're all going to make mistakes.
2. Keep it simple. One thing at a time.
3. Don't force families to make choices. Offer a default option.

### Dan's Initial Priorities:

1. Get families playing games at home
2. Give people an easy place to find more materials
3. Share problems and tasks that would instantly engage with minimal background (i.e. [Diffy Squares](#) or [Hailstone Sequence](#))
4. Give parents tools for math conversations at home

### Dan's Current Priority:

Help parents and kids *start from understanding*, especially when they're talking about algorithms and arithmetic.

All of us enjoyed the chance to share thoughts and ideas through the small group break out rooms. Here are the questions that we discussed:

What have been your greatest opportunities and greatest challenges of teaching remotely?

What are your current priorities for students/families learning math from home?

*Check out Dan's Math For Love website as well as these Math at home support emails.*

[Support email #1](#) [Support email #2](#)

[Support email #3](#)

[Support email #4](#)

[Support email #5](#) [Support email #6](#)

[Support email #7](#)

[Support email #8](#)

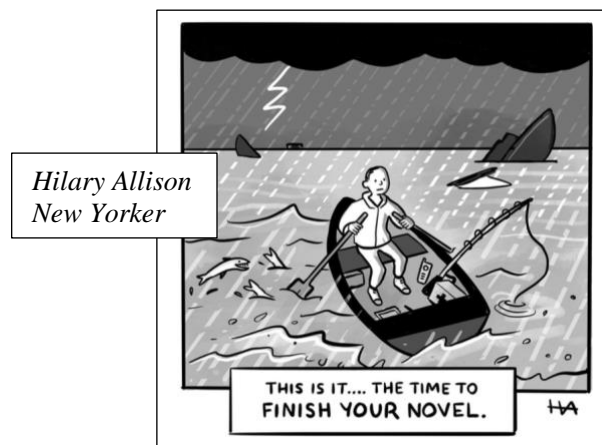
[Support email #9](#) [Support email #10](#)

[Support email #11](#)

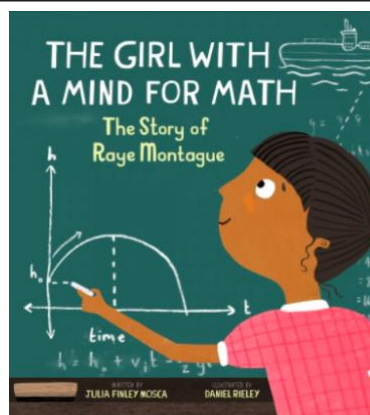
[Support email #12](#)

- - - *Joyce Frost*

*Enjoy these summer reading suggestions for young readers! - - - Jane Hunter*



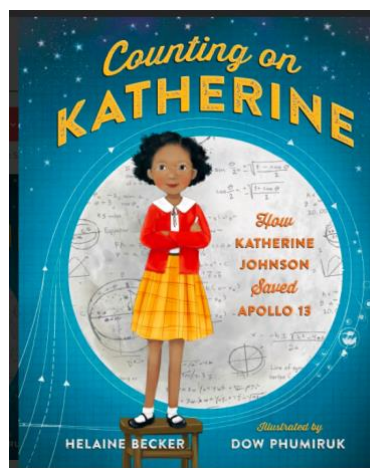




### ***The Girl With a Mind For Math: The Story of Raye Montague***

Written by: **Julia Finley Mosca** Illustrated by: **Daniel Rieley** Ages 5-9

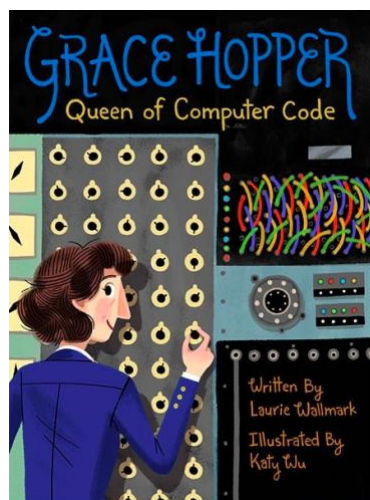
As a 7-year-old during WWII, Raye Montague toured a captured German submarine and immediately set her sights on becoming an engineer. Little did she know that sexism and racism would challenge her dream every step of the way. Raye ended up working at the US Navy as a typist, studying engineering at night. One day, when all the engineers were sick with the flu, she astonished everyone by completing all of their work. She went on to become the first person to design a ship on a computer and the Navy's first female ship designer. This inspiring picture book from the [Amazing Scientists series](#) celebrates a pioneer who changed ship design forever.



### ***Counting on Katherine: How Katherine Johnson Saved Apollo 13***

Written by: **Helaine Becker** Illustrated by: **Dow Phumiruk** Ages 5 - 9

[Katherine Johnson](#) loved to count, and despite the prejudices against both women and African Americans, she was determined to find a way to make her love of math into a career. As one of NASA's "human computers," Johnson hand calculated elaborate equations... including the trajectories that helped launch the Apollo 13 mission to the moon. When disaster befell the Apollo 13 mission, it was Johnson's flight-path calculations that brought the astronauts safely home. This inspiring biography of the mathematician catapulted to fame by [Hidden Figures](#) celebrates a love of math and encourages kids to follow their passions. For another picture book about Johnson and her colleagues, check out [Hidden Figures: The True Story of Four Black Women and the Space Race](#).



### ***Grace Hopper: Queen of Computer Code***

Written by: **Laurie Wallmark** Illustrated by: **Katy Wu** Ages 5 - 9

Grace Hopper was a software tester, a creative inventor, and a top-notch mentor — but she was also a famous rule-breaker, risk-taker, and sometimes a real trouble-maker! In this riveting picture book biography of the woman nicknamed "Amazing Grace," author Laurie Wallmark captures the determination and cleverness of the woman who invented the COBOL computer language, allowing people to "talk" to computers with typed commands. Fun anecdotes — like the time she found a literal bug in the computer — provide a glimpse into the extraordinary life of this accomplished woman, who knew that quick thinking and insatiable curiosity were the key to pushing a (sometimes reluctant) world forward.

## **Mashup Math: 11 Famous African American Mathematicians You Should Know About - February 13, 2019**



### **Mae Carol Jemison (1956 - Present)**

Mae Carol Jemison is a mathematician, engineer, physician, and astronaut. In 1992, she became the first African American woman to visit space when she went into orbit aboard NASA's Space Shuttle *Endeavour*. Jemison spent time as a physician and in the Peace Corps before joining NASA's astronaut program. She continues to be involved in several initiatives and served on the council for an initiative called "Science Matters" to encourage young children to understand/ pursue STEM careers.



### Benjamin Banneker (1731-1806)

Banneker, a mostly self-educated man in mathematics and astrology, is best known for building America's first clock—a wooden device that struck hourly. Using his rich understanding of trigonometry and astronomy, he accurately predicted a solar eclipse in 1789.

Banneker was also a passionate civil rights advocate. In 1791, he famously penned a letter to then secretary of state Thomas Jefferson asking for his help in improving conditions for Africans living in the United States, which highly impressed Jefferson and convinced many that blacks were intellectually equal to whites. He died at age 74 on October 9, 1806.



### John Urschel (1991-Present)

John Urschel excelled in both mathematics and playing football at Penn State University and earned bachelor's and master's degrees in mathematics. In 2014, Urschel was drafted from Penn State into the NFL by the Baltimore Ravens, where he played his entire NFL career before retiring at age 26 to further pursue mathematics.

He is currently working towards his Ph.D. in mathematics from MIT where some of his mathematical fields of interest include graph theory, numerical linear algebra, and machine learning.



### Fern Hunt (1948-Present)

Fern Hunt is best known for her work in applied mathematics and mathematical biology.

Throughout her great career, she has been involved with biomathematics, patterns in genetic variation, and chaos theory.

She currently works as an educator and presenter with the aim of encouraging women and minority students to pursue graduate degrees in mathematics and other STEM fields.

Hunt is a strong support of student choice, following one's passion, and surrounding yourself with a strong support system, which are all factors that she credits to her own personal success in mathematics.



### Katherine Johnson (1918-Present)

Katherine Johnson was the main character of the critically-acclaimed film *Hidden Figures*. Her contributions in the field of orbital mechanics, alongside fellow female African American mathematicians Dorothy Vaughan and Mary Jackson, were critical to the United States' success in putting astronaut John Glenn into orbit in 1962.

During her 35-year career at NASA, she held a reputation for being a master of complex manual calculations and helped pioneer the use of computer programming for performing complex calculations.

She was awarded the Presidential Medal of Freedom by President Barack Obama in 2015.



### Lonnie Johnson (1949-Present)

Lonnie Johnson is a famous inventor, mathematician, and engineer who holds over 120 patents. He served as an engineer for the U.S. Air Force, where he worked on developing the stealth bomber, and later for NASA's Jet Propulsion program.

He is best known for inventing the Super Soaker water gun while working at the U.S. Air Force, a product which has grossed nearly \$1 Billion since 1990. He also invented a "toy projectile gun," which eventually became the Nerf Gun.



### Euphemia Lofton Haynes (1890–1980)

Euphemia Lofton Haynes is famous for being the first African-American woman to earn a Ph.D. in mathematics, which she achieved from the Catholic University of America in 1943.

After earning her Ph.D., she embarked on a 47-year career of advocacy for students of color, improving schools, and overcoming the harmful effects of racial segregation. During this time, she was also a math professor at the District of Columbia Teachers College, where she managed the Division of Mathematics and Business Education department. Haynes died at the age of 89 on July 25, 1980.





### Valerie Thomas (1943-Present)

Valerie Thomas is a scientist and inventor best known for inventing the Illusion Transmitter in 1980. This technology was the first of its kind in the field of 3D-imagery and is the basis for modern 3D-televisions, video games, and movies.

From 1964 -1995, Thomas worked for NASA, developing real-time computer data systems and managing the team that developed the *Landsat* technology that supported the first satellite to transmit images from outer space.

Today, she continues to serve as a mentor for youth through the *Science Mathematics Aerospace Research and Technology and National Technical Association*.



### Elbert Frank Cox (1895-1969)

In 1925, Elbert Frank Cox was the first black man to earn a Ph.D in mathematics not only in the United States, but in the entire world.

After receiving this honor, Cox became a professor of mathematics at Howard University in Washington D.C. and eventually became chairman of the Mathematics Department in 1957. He would hold this role with great esteem until his retirement in 1965.

In 1975, the Howard University Mathematics Department established the Elbert F. Cox Scholarship Fund for undergraduate math majors to encourage young black students to pursue degrees in mathematics.



### Mark Dean (1957-Present)

Dean is a famous computer scientist and engineer, credited with assisting in the development of several breakthrough computer technologies for IBM.

He invented the first gigahertz computer chip and co-invented the *Industry Standard Architecture System* for computing, which allows for common plug-ins such as personal printers and modems.

Dean was inducted into the National Inventor's Hall of Fame in 1997



### Annie Easley (1933-2011)

Annie Easley is famous NASA computer and rocket scientist and mathematician who contributed to several space programs, inspired others through her participation in numerous outreach programs, and broke down barriers for both women and African Americans in STEM. Most notably, she was a leading member of the team that developed the breakthrough *Centaur* rocket, which opened the door for the launch of many of NASA's most important missions.

Easley was known for being a "human computer" and always fought to do her best in the face of adversity. In a 2001 interview she shared that "I just have my own attitude. I'm out here to get the job done, and I knew I had the ability to do it, and that's where my focus was."



Julie Nolke - [Explaining the Pandemic to My Past Self](#) and [Explaining the Pandemic to My Past Self, Part 2](#)  
The past six months explained by Julie Nolke, Canadian actress and writer.

## Google Forms: Add Some Engagement to Your Online Classroom- *Jane Hunter*

Online school again? Ahhhhh!!! I just met with my juniors and seniors in their closing Zoom session and broke the news that starting the new 2020/21 school year in some type of an online situation was a very good possibility. I clearly remember these same students of mine breaking out in cheers in March when school was shut down and now ... they all moaned and told me that they really missed school. Missed school? No way! Really? I turned to them and asked them to thumbs up and down what they actually missed...believe or not, they not only missed their friends and the social aspect, but they missed me – they missed being with their teachers and they even missed the in-person instruction! It was nice to know, but the reality is that as educators we need to be prepared for all possibilities. So, assuming we will be back in some fashion online...I asked them, what worked? The results were a mixed bag of tactics:

1. Zoom instruction once a week
2. Some form of short video instruction combined with a 4 to 6 problem assignment – they insisted that learning at home was daunting if it didn't come in bite sized chunks.
3. They felt that what initially engaged them were my Google Form Questionnaires.

When we were first at home and desperately trying to reach students, a good friend and colleague of mine, Michelle Poletski, shared her Google Form with me. I now realize that numerous teachers have been using these for years. This was fabulous - as a math teacher the instantaneous results were incredible! I used Google Forms to entice the kids back to the classroom and then slowly added some math into them. The value is:

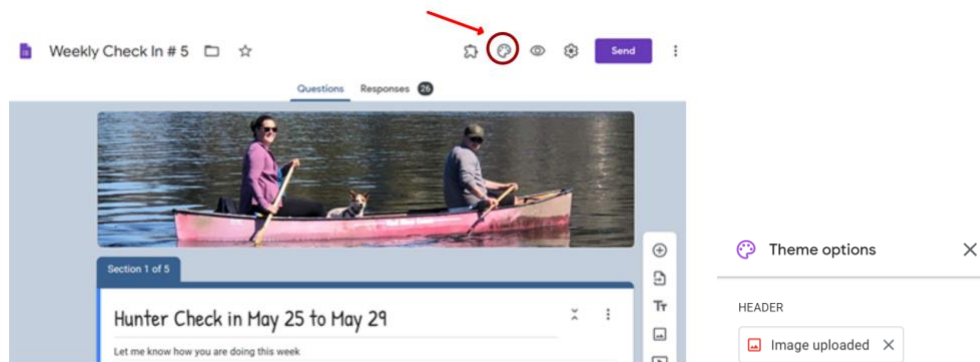
1. They are easy to create and personalize.
2. They give you immediate mathematical graphs and statistics.
3. You can even put the data into a spreadsheet to view.

### So, let's get started!

**Quick Hint** – once you have created a document – make sure and save a Copy so that the next time you only have to edit the copy. This way you always have something to work with and you don't have to continuously recreate the wheel.

**Step 1. Go to your Google Drive. Click on ... New – More – Google Forms – New.**

**Step 2. Personalize the theme**



**Step 3. Start by having them give their name or things will be sorted by student number/email.**

Name: First & Last \*

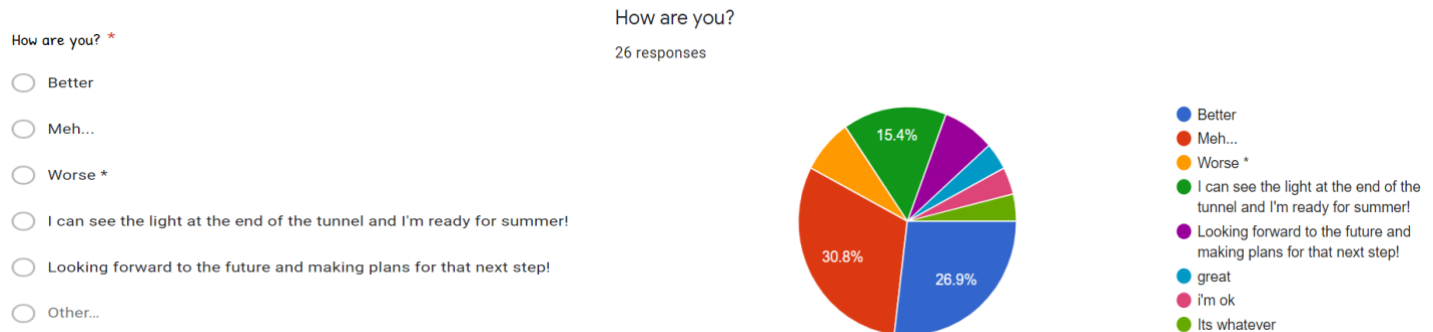
Short answer text



## Step 4. Have some fun and get creative!

Depending on the type of question you ask, you will get a different graph back. For example:

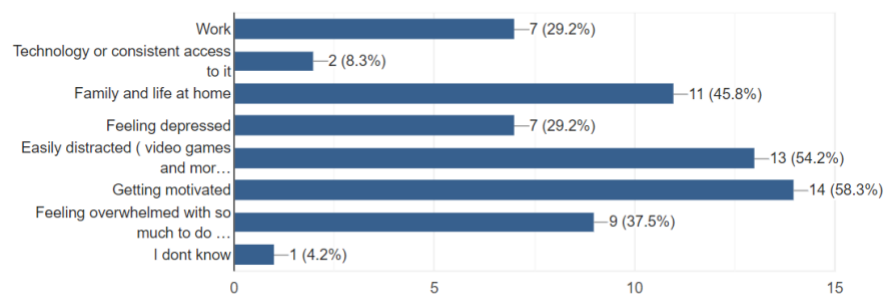
### Multiple Choice questions



### Or Check Boxes

There are only 3 weeks left to go and now is the time to get super motivated. This means setting some type of schedule will help. What things are still getting in the way (check the ones that apply and or add to the Other)?

24 responses



You can also create a spreadsheet so you can quickly access the data for a gradebook.

Weekly Check In #4

Questions Responses 29

29 responses

Accepting responses

Summary Question Individual

Weekly Check In #4 (Responses)

File Edit View Insert Format Data Tools Form Add-ons Help

Timestamp

Timestamp	Email Address	Name: First & Last	How are you?	If you answered "worse" t I am setting up a variety o What ph
1				

***Most importantly (as my friend Michele reminded me), we don't work well in a vacuum.***

***Share your ideas with your friends! - Best of wishes!***

***Together we will make it through this crisis and achieve some success with our students!***

***Jane Hunter***

## ***Congratulations to our PSCTM Spring Dinner Pennewell Prize Winner!***

**Erica Mahoney** won a \$100 Math 'n Stuff Gift Certificate to buy materials for her classroom!

Erica says she is finishing her 15th year of teaching and this year taught 2nd grade in Northshore School District. Next year, she will teach 3rd grade to highly capable students in the same district.

Her summer reading will include finishing *Flight Girls* by Noelle Salazar and reading, *So You Want to Talk About Race* by Ljeona Oluo. She is excited to use her gift certificate to get more math games for her classroom to promote deeper thinking, fun, and collaboration around math skills.

**What's on your summer reading list, PSCTM members? - - - Joyce Frost**



## **Don't be silly - that's illogical. - - - Carl Cotton**

The world of logic can be an awesome world. We all remember proofs in math. It was loved. It was hated.

The conditional: "If it's a dog, then it's a mammal." ( $P \rightarrow Q$ )

The contrapositive: "If she's not a mammal, then she can't be a dog." ( $\sim Q \rightarrow \sim P$ )

The British mathematician, Charles Lutwidge Dodgson, aka Lewis Carroll, made a fun game of it all.

Syllogism and Detachment is what it's formally called. In dry form, add "If it's a mammal, then it's an animal" and "She's a dog" to conclude "She's a mammal".

( $P, P \rightarrow Q$  and  $Q \rightarrow R$  yields  $R$ )

Of course, Dodgson does it all as whimsical, nonsense. Consider this excerpt, number 1 of 60, from *A Miscellany* in *The Complete Works of Lewis Carroll*.

[Babies are illogical. ( $B \rightarrow \sim L$ )

Nobody is despised who can manage a crocodile. ( $C \rightarrow \sim D$ )

Illogical people are despised.] ( $\sim L \rightarrow D$ )

His conclusion: [Babies can't manage crocodiles.]. ( $B \rightarrow \sim L \rightarrow D \rightarrow \sim C$ )

- Try some.
- Make up your own.
- Give it to a friend.

Mine: #61

[Nobody who is sun burnt eats Brussels Sprouts

All who brandish swords eat Brussels Sprouts.

Anyone not having a sunburn will go to the dance Saturday.]

Let  $S$  be a person who is sun burnt,

$W$  be the individual who brandishes a sword,

Hint: The universal set is people

$B$  anyone who eats Brussels Sprouts,  
and  $D$  someone who is going to the dance.

[Every swordswoman is going to the dance.]  
Answer:

**Save these *TENTATIVE* dates for  
PSCTM's 2020/2021 Dinner Presentations!**

**Monday, October 21, 2020**

**Monday, February 8, 2021**

**Monday, May 17, 2021**