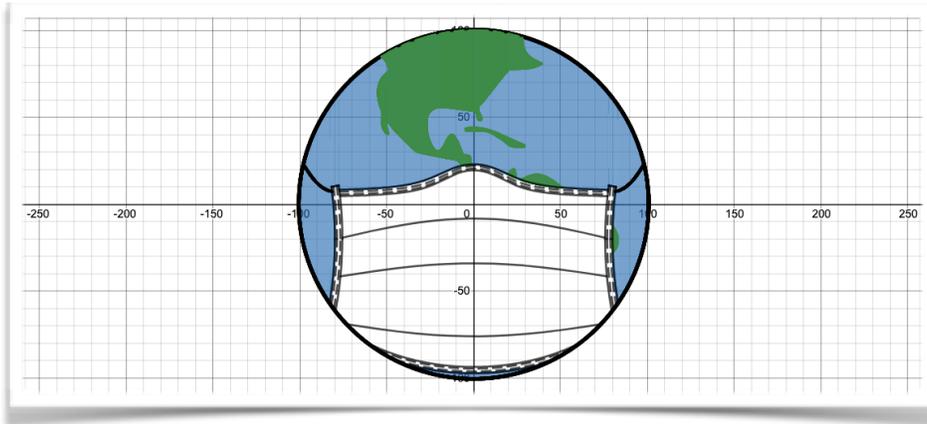


# Math Monthly



THE SCHOOL DISTRICT OF  
PHILADELPHIA

Connecting the School District of Philadelphia's Mathematical Community



One of the finalists in the [Desmos Global Math Art Contest](#)

Wow - what a way to end the year! Thank you for your role in continuing high quality math instruction during all this uncertainty. Every day you inspired us with your determination to conquer the technology, your execution of the remote learning slides, and your dedication to our students. We all now have a moment to breathe, regroup, and take on next school year with a bigger toolbox.

In this edition of the newsletter, you will find:

- summer reading ideas
- new guiding documents for the 20-21 school year
- opportunities to engage in math
- announcements
- our mathematical charges

Enjoy!

Sincerely,  
Lauren Young, *Director of Mathematics*  
Emily Magee, Jaimie O'Sullivan, and Meredith Scheiner,  
*Math Curriculum Specialists*

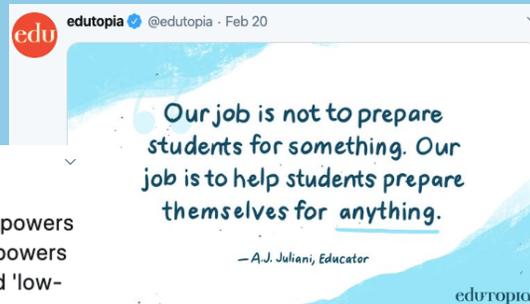
## Some Things to Tweet About

 Fawn Nguyen  
@fawnpnguyen

"But if all learners are treated as possessing the powers necessary to think mathematically, and if those powers are evoked, developed and refined, the so-called 'low-attainers' can transcend expectations."

John Mason and Sue Johnston-Wilder, *Designing & Using Mathematical Tasks*

3:03 PM · Mar 1, 2020 · TweetDeck



## Summer Reading

The following books are on our summer reading list. Curling up with a good math education book brings us joy. Unlike during the year, there isn't a sense of urgency around it. Now is a great time to reflect, notice, and wonder in order to be proactive in the months ahead. If you, like us, find the summer a time for renewal, refocusing, and reading feel free to share your reading list with us ([math@philasd.org](mailto:math@philasd.org)).

1

Access and Equity: Promoting High-Quality Mathematics Grades 9–12 (2018)

Also in PK-2, 3-5, & 6-8

2

Math Recess (2019)

3

Critical Race Theory in Mathematics Education (2019)

4

Humanizing Disability in Mathematics Education: Forging New Paths (2019)

5

Becoming (2018)

# The Mathematics Instructional Framework

**Everything in the visual was done with intentionality. What do you notice? What do you wonder?**

We are excited to share the School District of Philadelphia's vision for mathematics instruction. Everything in that visual, from the use of the gears, to the size of the gears, to the order of the instructional block components, is purposeful. *Why might we have chosen gears to represent the components?*

The framework is focused on providing a structure for teachers to develop and execute math lessons with a balance of solid conceptual understanding, procedural skill and fluency, and the application of skills in problem solving situations. It is designed to increase students' engagement with the content, encourage and support productive struggle with grade level standards, all while implementing the Standards for Mathematical Practice.

**The framework was created based on the most current evidence-based research on effective methods for increasing student learning and developing positive mathematical mindsets."**



*You will dig deeper into the Mathematics Instructional Framework throughout the 20-21 school year. In the meantime, if you'd like to read the guiding documents behind the framework, e-mail [math@philasd.org](mailto:math@philasd.org) and we will share some.*

## Math Scope and Sequences for 2020-2021

During these uncertain times, there isn't a lot we can say "this we know for sure" about. Well, we are channeling Oprah and are building next year's Scope and Sequence off of "What We Know For Sure." Here are some of our certainties below.

- We know that students and teachers will need at the beginning of the school year to build community and meet emotional needs no matter the learning environment. Therefore, we have created a plan for instruction that provides teachers with an opportunity to address these needs at the start of the year. We will provide options to engage with content, but are also being purposeful in how we map out the rest of the year to accommodate this time.
- We know that students engaged with the remote learning differently. We also know that sometimes there are opportunities for students to re-engage with content that was planned for the end of the year. We are providing opportunities for students to re-engage with content in the S&S or in the upper grades, we were intentional to ensure that the prioritized content is strategically revisited within the coherence of newer content.
- We know the type mathematical tasks we give students matter. The tasks dictate the quality of thinking students are doing and also send messages to students around their own type of mathematical mindsets. We anticipate that the Formative Task portion of in the framework (above) might be the biggest shift. Therefore we are including Formative Tasks in the Scope & Sequence to help support this shift.
- We know that for both teachers and students, the joy, curiosity, and real learning in math comes from exploration and discovery. We also know that that there are high quality math resources that facilitate this work. Our scope and sequence will lay out the trajectory content and provide suggestions on how to integrate standards aligned supplemental materials to support the math instructional shifts we are making with the framework.

We are also looking forward to sharing and engaging with you around the new scope and sequences throughout the 20-21 school year.

# Do Math!

## Problem of the Month

**Contest!** Send a picture of your thinking to [math@philasd.org](mailto:math@philasd.org) by July 20th, and 3 good thinkers will be randomly chosen for a prize. Winners will be announced in the next newsletter.

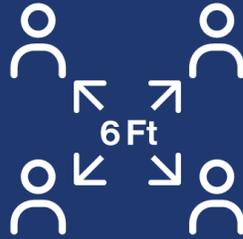
What's mathematically inaccurate about the image below?

**Stay at least six feet apart when leaving your home for essential activities.**

Mantenga al menos 6 pies de distancia para actividades esenciales afuera de la casa.

當您必須外出進行必須的活動時，請保持至少6英尺的社交距離。

Visit [sf.gov/coronavirus](http://sf.gov/coronavirus) for more information.



San Francisco Department of Public Health

## Always, Sometimes, Never

"Always, Sometimes, Never" is a routine that can be used in grades K-12. In it, the teacher provides a statement and students decide whether each statement is always, sometimes, or never true. The emphasis is on students making a claim and supporting that claim with examples and counterexamples. Similar to ELA and Science, right?

The statements to the right are examples of statements that can be used to start the class. These ones range from 3rd grade (example a) all the way to high school (example c).

Are the following statements always true, sometimes true, or never true? How do you know?

- Multiples of 5 end in a 5.
- If you add two odd numbers, you get an odd number.
- When you multiply two numbers, you will get a bigger number.
- A square is a rectangle.

Source: [nrich.maths.org](http://nrich.maths.org)

To use as an instructional routine, simply put a statement on the board and give students individual and/or group think time to draft their argument. Then have students share out all while encouraging mathematical debates.

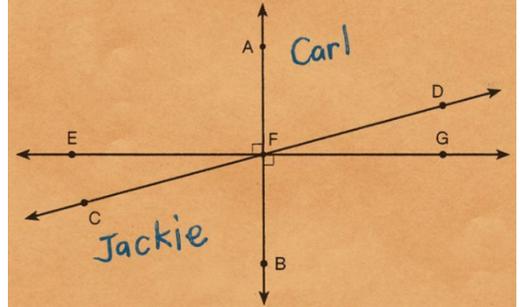
This routine encourages students to critique the reasoning of others ([SMP 3](#)) and it forces them to make sense of the structure of numbers and operations ([SMP 7](#)). If you're intrigued, you can search the internet for grade specific statements or write your own!

*We would love you to share in your success stories as you use this routine with your students. E-mail us at [math@philasd.org](mailto:math@philasd.org) with any stories, to brag, or simply share lessons learned.*

## Math Humor

(only a fraction of people will find it funny)

1. Name a pair of vertical angles:



F For Effort: More of the Very Best Totally Wrong Test Answers, 2012

Q: How do you stay warm in a cold room?

A: Go to the corner, it's always 90°!

## Announcements

1

### Summer 2020 Virtual Professional Development for Math Educators

Click [HERE](#) for a list of over 50 high-quality math PDs for teachers and leaders to engage in throughout July and August. Some are free and can be watched on demand!

E-mail [math@philasd.org](mailto:math@philasd.org) if you'd like suggestions on what sessions to attend.

2

### Free Virtual Math Conference (with Act 48 credits)

On July 23rd, for the first time, the PA Council of Teachers of Mathematics is waiving the fee to its annual math conference. To engage in these inspiring and useful sessions register for the PCTM conference [HERE](#).

To look at the schedule, click [HERE](#).

We hope to see you there!

3

### You can find the newsletter online!

Look either on Schoolnet under Math in each grade or on the OCI website here:

<https://www.philasd.org/curriculum/curriculum-and-instruction/core-subjects/math/>

# Reflecting On Math's Role in Our Work Towards Social Justice

Meredith Scheiner, Math Curriculum Specialist ([mscheiner@philasd.org](mailto:mscheiner@philasd.org))

In 2002, my high school math teacher pulled me aside after graduation, handed me a list of books to read, and then apologized. She knew I wanted to be a teacher and she lamented on how she failed us by only teaching about numbers and how to operate with them. Her students never learned about the power that can come from an algorithm in real life and how math must be used for good, not evil. She went on to vow to make her “History of Math” class mandatory as the majority of her students left school believing that only people like Euclid, Pythagoras, and other white European men belonged in the mathematical conversation.

What cultures/people did you learn about in your K-12 math classes?

While I've been spending my subsequent educational career making sure I don't repeat the mistakes of my high school teacher, these last several months reminded me that there is still a lot of work to be done in ensuring that our math classrooms are inclusive places where students use math to make sense of, question, and challenge the world around them.

After the events in Charlottesville, The National Council of Teachers of Mathematics called on the national math community to commit to [three charges](#). NCTM then reiterated these charges in [“A Statement on George Floyd, Breonna Taylor, and Ahmaud Arbery”](#). These are the three charges:

1. We support the use of mathematics as an analytic tool to challenge power, privilege, and oppression.
2. We encourage all educators to challenge systems of oppression that privilege some while disadvantaging others.
3. We encourage all educators to create socially and emotionally safe spaces for themselves, their students, and colleagues.

Both NCTM and math teachers recognize that math is more than numbers on paper. In [Weapons of Math Destruction](#), Cathy O'Neil explains, “The [mathematical] models being used today are opaque, unregulated, and uncontestable, even when they're wrong. Most troubling, they reinforce discrimination...” Our current experiences with Covid-19 and the Black Lives Matter movement continue to highlight how our funding models (among others), while mathematically grounded, are oppressive. We need to, now more than ever, teach our students about these mathematical models that govern our lives and do so in a way the elevates student voice in the classroom.

We, the School District of Philadelphia's Math Department, are committed to those three charges and we ask that you, our mathematical community, commit to them as well. We recognize it's a journey and that it requires a national reckoning around what math is taught and how it's assessed. However, we are beginning our journey by putting student voice and thinking at the center of the math classroom with the Mathematics Instructional Framework. We are also providing opportunities for teachers to add culturally relevant tasks to their lessons with our revamped Scope & Sequences (both on page 2). We look forward to taking this journey together. If you would like to read more about this topic, but don't know where to begin, e-mail us at [math@philasd.org](mailto:math@philasd.org) and we will suggest some starting points.

“And we urge educators to create structures where each and every student can be fully engaged in our democratic society in constructive ways. We owe this not only to our students but also to the society we wish to inhabit both now and in the future.”

-Matt Larson and Robert Berry

Is there something missing from this newsletter? What would you like to see?

Email your thoughts to [math@philasd.org](mailto:math@philasd.org)!