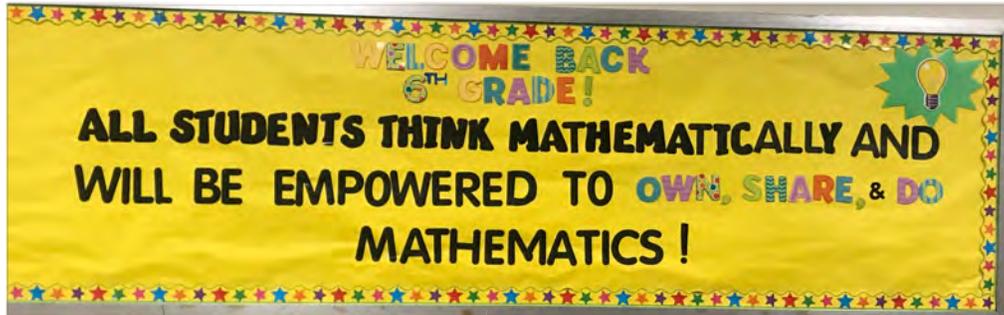


# Math Monthly



THE SCHOOL DISTRICT OF  
PHILADELPHIA

Connecting the School District of Philadelphia's Mathematical Community



James Dobson Elementary School, 6th Grade

Thank you for all the support for our first math newsletter! To answer the most common question we are receiving: Yes, we are creating this just for you! While you may share it with students, our main goal is to engage educators in conversations around math instruction.

In this edition of the newsletter, you will find:

- free online presentations that inspire
- a census project
- opportunities to engage in math
- a look at Desmos and how to use it in your classroom
- announcements
- strategies for making cooperative group work even better

Enjoy!

Sincerely, The Math Team at [math@philasd.org](mailto:math@philasd.org)

Lauren Young, *Director of Mathematics*

Emily Magee, Jaimie O'Sullivan, and Meredith Scheiner,

*Math Curriculum Specialists*

## Some Things to Tweet About



Kim Morrow Leong  
@kmorrowleong

Some sanity in the manic race to "cover" standards.  
"Uncover them."



Marilyn Burns @mburnsmath · Jan 26

What guides my teaching decisions is that my job isn't to cover the standards -- it's to uncover them.



Matthew R. Morris  
@callmemorris

Often, when poverty intersects with schooling, it is not the poverty that is the most fundamental obstacle. It is teacher's perceptions of what poverty supposedly means #HipHopEd

9:40 PM · Jan 21, 2020 · TweetDeck

## Want More?

Here are videos/presentations that inspire us to reflect on our practice, bring excitement to our work, and connect us to the larger mathematical community. We invite you to take a look, all from the comfort of your computer.

### 1

[Beyond Relevance & Real World: Stronger Strategies for Student Engagement](#)

-Dan Meyer

(One of our top 5 favorites!)

### 2

[Why We Should Reconsider Using Word Problems \(And What We Should Be Doing Instead\)](#)

-Robert Kaplinsky

[Elementary Middle School High School](#)

### 3

[Ever Wonder What They'd Notice?](#)

-Annie Fetter

(It is short, but impactful.)

### 4

[Examining Equitable Teaching Using the Mathematics Teaching Framework](#)

-Robert Q. Berry III

(Download Adobe Connect)

## Guest Mathematician

Paula Don, Director of Gifted and Talented Education ([pdon@philasd.org](mailto:pdon@philasd.org))



In 2000 while I was teaching at Childs, I started a web-based project for the younger grades -- The Pet Census -- in an effort to help younger children understand large numbers, data sets, and analysis. It was extremely successful. Schools all over the country participated (Canadian and Australian ones, too!).

I ran the project again in 2010 with equal success. And here we are again. It's a census year, with both data literacy and civic participation becoming increasingly necessary to successfully navigate our society.

**Therefore, I want to invite your students to participate in this fun, low stress project.** The more schools and geographic locations that participate lend themselves to a richer data set for analysis. With so much emphasis on building awareness of the census, I want to share this project with all of you; and invite you to invite your schools to participate. You can visit the project by going to: <https://sites.google.com/philasd.org/petcensus>. Please reach out to me if you have any questions or would like support bringing this to your class and/or school. I can't wait to hear about your census conversations and see all your pets in the data!

*Have something to share? Would you like to be featured as our next guest mathematician?  
E-mail [math@philasd.org](mailto:math@philasd.org) to learn more!*

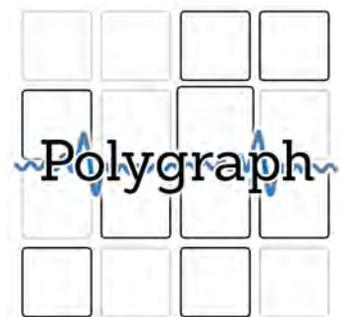
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## Creating Rich Vocabulary Classrooms with Desmos

Jaimie O'Sullivan, Math Curriculum Specialist ([jheck@philasd.org](mailto:jheck@philasd.org))

*In the last edition of the newsletter we shared the importance of purposeful technology integration and promised an example of what that looks like. Here it is!*

Much like the popular Hasbro game *Guess Who?* of our past, Desmos has created a similar model on its platform with Polygraph to **enhance students' need for precise vocabulary**. In Polygraph, students are paired up online through their computer. One student picks the graph and answers questions. The other student asks questions and tries to identify the chosen graph. Both students see the need for more precise vocabulary. According to Desmos, "Picking and guessing create the need for words—students *want* to describe the subtle differences they see in the mathematical objects in front of them. Sharing questions provides opportunities to spread words among students—students read how their classmates have described these differences. Whole class conversation led by the teacher [who sees all interactions] helps to formalize and cement the vocabulary—the teacher can introduce the standard words that describe these same differences."



**What a powerful way to create a need for vocabulary before it's introduced!**

Even if you don't have a 1:1 ratio of computers to students, this also is just as meaningful with students working in partners on a computer as they have to discuss what they are thinking before they type it.

*Desmos has various Polygraph activities available for many grades and content levels, which can be found at [teacher.desmos.com/polygraph](https://teacher.desmos.com/polygraph). E-mail me if you'd like to talk more about learning with Desmos!*

## Do Math!

### Problem of the Month

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

**Using the numbers 1 through 9 and only 3 addition or subtraction signs, create an expression equal to 100.**

Adapted from, *The Moscow Puzzles: 359 Mathematical Recreations*, 1992, pg. 23

#### Last Month's Winners:

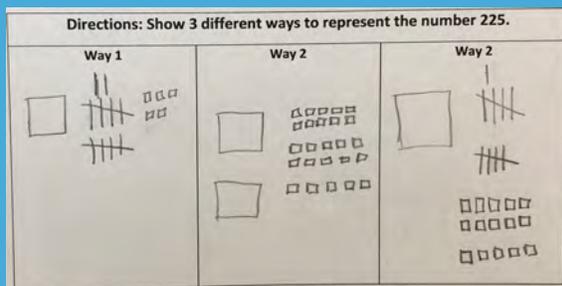
Natalie Catin-St. Loius, **Principal**, *George W. Nebinger*  
Lorenea Meskill, **5th Grade Math Teacher/ MLT**, *Francis Scott Key*

### Math Instructional Routine

"Let Me Count the Ways" is a routine that can be used in grades K-4. In it, the teacher provides a number and students make the quantity in various ways. The emphasis here is on decomposing and creating equivalent representations of the number.

#### Example (great for 2nd or 3rd grades):

Students show 225 with their base ten blocks in the standard representation. Then, they are directed to find and record different ways to represent 225 with their base ten blocks (perhaps at least 2-3 additional ways). Then, show a student's work and have a class discussion around the different representations. To increase student discourse, have students work in pairs as they are finding the different ways.



This routine helps with conceptualizing place value, promotes flexibility in place value understanding, and helps lay the foundation for regrouping/ungrouping found in the standard algorithms for adding and subtracting.

*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)

Expand  $2(x + y)$

*F in Exams: Pop Quiz: The Very Best Totally Wrong Test Answers*, 2011, pg. 56

**Q:** Why did the child get upset when his sister called him average?

**A:** It was a *mean* thing to say!



### Announcements

# 1

#### Professional Growth Opportunity!

Join us at Summer Leadership Institute as a Lead Facilitator. Email

[Math@philasd.org](mailto:Math@philasd.org) for questions.

Deadline is March 6th. Apply here: <https://jobs.philasd.org/wp-content/uploads/sites/47/2020/02/Professional-development-facilitator-for-SY-20-21.pdf>

# 2

#### You can find the newsletter online!

Either on Schoolnet under Math in each grade or here: <https://www.philasd.org/curriculum/curriculum-and-instruction/core-subjects/math/>

# 3

#### Have parents who want to know how they can support their students at home?

Direct them to the Parent Curriculum Resources on the OCIA webpage: <https://www.philasd.org/curriculum/home/parentpages/>

# Reflecting on Research: “Making Cooperative Learning Work Better”

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

*The Cult of Pedagogy*, by Jennifer Gonzalez is one of my favorite podcasts to listen to as it encourages me to reflect on my own practice, inspires me to continually grow, and is honest about the challenges educators face. Gonzalez’s February 4, 2020 episode entitled “[Making Cooperative Learning Work Better](#),” did just that. As I reflected on my difficult journey to implement cooperative learning in my math classrooms I was inspired to support others in theirs.

How do you create opportunities for students to learn cooperatively during your math instruction?

Before Gonzalez shares the ways to make cooperative learning better, she shares the research around it. She specifically references Robyn Gillies’s article, “[Cooperative Learning: Review of Research and Practice](#)”, which is an overview of 40 decades of research around cooperative learning. In that article, Gillies concludes: **“The evidence for the success of cooperative learning as a pedagogical practice that promotes both socialization and learning is overwhelmingly supported with meta-analyses... attesting to the benefits students derive when they cooperate with others.”** Gillies further elaborates that cooperative learning only produces these results if teachers implement it in a way that includes the following elements: **positive interdependence, individual accountability, students genuinely helping and encouraging each other, the teaching of interpersonal skills, and time for processing the groups interactions.**

After explaining why it is worth investing time and energy into facilitating cooperative learning, Gonzalez shares common challenges with cooperative learning, offers solutions to these challenges, and provides practical tips. For example, to address the challenge of students not getting along in the group, one suggestion is to have the group do a team building activity working on an academic task. This reminded me of my colleague who had table groups do a getting to know each other activity every time she made new groups.

“In general, when students work together, they make greater academic and social gains than when they compete against one another or when they work individually. But merely putting students into groups is not enough to realize these gains. To be effective, cooperative work needs to be structured so that it embodies five key components...”  
-Jennifer Gonzalez

As we shift math instruction to be student centered and collaborative, Gonzalez reminded me that students need to be taught collaboration skills. My mentor teacher told me years ago when we noticed my students working near each other, but not with each other, “You should only change the process or the content for each part of your lesson as students need time to make sense and apply anything new.” He was right. Processes, including collaborative skills and structures, need to be planned for and explicitly taught. His advice applied beyond the specific cooperative learning task he was referencing. If I wanted my students to fully engage in the math instructional routine, or discuss various strategies, I needed to teach them the skills to do so. I encourage everyone to read [Making Cooperative Learning Work Better](#) and make a commitment to start/continue the journey towards creating a classroom **where students are empowered to work with each other to make sense of the mathematics!**

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

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