NOTES TO NERDS

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DATE: SATURDAY, MARCH 12, 2022, TIME: 8:00AM – 12:00PM

LOCATION: FRANK BROWN HALL, RIVERPARK CAMPUS

MATH MASTERS MIDDLE SCHOOL COMPETITION

Math Masters Middle Grades Teams Competition - LibCal - Columbus State University

Math Masters, a middle grades mathematics team competition, is a collaborative effort among the Columbus Regional Mathematics Collaborative, the Department of Teacher Education, and the Department of Mathematics.

Teams of middle grades students work together to solve task-based math problems. When they have agreed on an answer, they orally present their work to a Master Teacher. When the team answers correctly, they move to the next question. The top three teams with the most correct answers take trophies back to their schools.

The cost for the event is $60.00 per team.

Schools will be invoiced on the day of the event via the registrant's email.

Teams are welcome to make arrangements for registration if invoicing process is not satisfactory by contacting Peter Anderson - Contact me

Good News

UPCOMING WORKSHOP:
FEBRUARY FACE TO FACE WORKSHOP

Date: Tuesday, February 22, 2022, Time: 8:30am – 3:30pm
Location: Frank Brown Hall, Room 1010

WITH A LITTLE, YOU CAN CHANGE A LOT

Middle School Face to Face Workshop – Grades 6-8
https://columbusstate.libcal.com/event/8874936
Presenter: Hope Phillips

Need a shot in the arm? Something impactful that fits alongside your daily instructional practices?

Something new that rejuvenates a love of math?

We at the math collaborative believe good things come in small packages.   Join us to learn about micro changes that can have big impacts on students' reasoning, discourse, review of skills, and interest.

Face to Face Workshops are available to Muscogee County Schools at no cost to the teachers.

After the workshop, you will receive an evaluation.
Upon completion, you will receive a Certificate of Attendance for the workshop.

To view and register for any of our upcoming workshops, please visit our libcal page!
Mathematics Collaborative - LibCal - Columbus State University

DIRECTOR'S NOTES

THE BEST-LAID PLANS OF MICE AND MATH TEACHERS.

Several factors drive what we teach and how we teach in the classroom. Often, it is easy to get caught up in pacing guides or curriculum plans and lose sight of the fact we are teaching *students*.

This past Friday, I visited a seventh-grade class to present a lesson on lines and angles. I was pretty pumped! (A *lot of folks think I am a little crazy, too.*) My learning goal was for students to reason about the measures of angles created by intersecting lines. I planned a vocabulary activity and tasks using patty paper to create and work with intersecting lines. I was more than confident we could do it all in just 50 minutes!

Such lofty goals!

New to the class, I introduced myself while discussing my expectations. Students were randomly assigned to groups where they had to discuss vocabulary and definitions from a picture board (see image below).
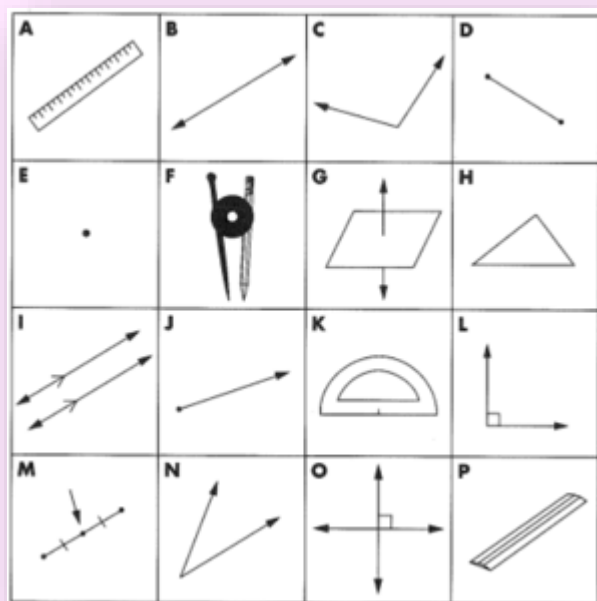
One student identified object "H" as a triangle. When I asked," How do you know?" he responded, "because it looks like one."
I followed with, "What are the properties of a triangle?" He shrugged his shoulders with an "*I-don't-know-what-you-are-asking*" nonverbal response. I asked, "How would you describe it to someone who has never seen a triangle before?" He replied, "There are three points…." I drew a picture on the whiteboard as he described a triangle.

Game on! This was when the actual conversation began! Discussions like this occurred all over the classroom–between students and between students and teachers. It was the foundation for what came next.

I introduced the class to forming conjectures and to patty paper (small 5"x5" wax paper squares for folding and marking…or for separating hamburger patties to be grilled). We explored the properties of intersecting lines by folding the patty paper. Students did very well reasoning to create conjectures and to explain their thinking.

And just like that, class ended - way too soon!

I have to admit I was sad. I wanted to do so much more! And, I kind of felt like the students did, too.

I was about to apologize to the teacher when he came to me excitedly and said, "There were kids in my class talking who hardly ever speak up. What about the student discourse?! They were talking to each other about the math. This was awesome!"

At this point, I was a little bit humbled. I had this magical, and maybe a little arrogant, idea that I would get a ton of stuff done. It turns out we did get a ton of stuff done. It was the stuff that needed to get done—the stuff of learning. We addressed the students' needs, even though we did not achieve the lofty learning goal I originally had in mind.

How often do we teachers forget that it is not solely about covering the curriculum but also about **student learning**? Even though the lesson was student centered, I was concerned about not meeting the learning goal. The vital point of the exercise was to create an environment for student discourse and learning.

Thank you, seventh-grade students, for keeping this teacher focused on the learning.

Happy Maths,
Pete
Here is a link to a folder with my lesson from that day: Lines and Angles.

Resource Teachers

When Will I Ever Use This?
By: Hope Phillips

It's the question on the lips of most math students – When will I ever use this? To be fair we teachers should have a response to this question whenever the concept at hand is relevant in a real world context. Recently, the Math Collaborative got a healthy dose (pun intended!) of where-will-I-use-this-math from their neighbors in the College of Education and Health Professions.

CSU Nursing Instructor Tonya Herring teaches NURS 3175 Pharmacology in Nursing where nursing students learn to calculate medication. She had the clever idea to team with the Math Collaborative to bolster the math part of her course. How's *that* for addressing where-will-I-use-this? How important is knowing math when nurses are dispensing medication? It can be, *literally*, a life or death situation. What math, though, is important to know if you are a nurse?

For this middle school teacher, the answer to what math do nurses need should involve a drum roll…RATIO REASONING, the cornerstone of the middle grades math curricula! I've heard it said that the math of the middle school is the math of life, and ratio reasoning is a big part of this. So, what does ratio reasoning have to do with pharmacology? EVERYTHING.

Tonya Herring gave us Math Collaborative folks the problems she gives her nursing students, our "homework" for working with her students. Pete Anderson, Laura Stokes, and I worked the problems and then discussed how we should present them to Herring's students. Our conversation addressed **proportions, dimensional analysis, equivalent ratios, unit rates, rates, the importance of units, division of decimal numbers, multiplicative identity property of one, and converting measurement units within one and two systems of measurement**. While the middle school math curricula is not the sole owner of these concepts (right, elementary school teachers?), they all fall within *ratio reasoning*.

See if you can solve some of the sample problems below. These are actual problems from NURS 3175 Pharmacology in Nursing**.** Unfortunately, the School of Nursing will not award you a nursing degree if you can solve them correctly!

Converting Weight:
1. A patient weighs 170 lb. What is the patient's weight in kilograms?

2. A patient weighs 3,200 g. What is the patient's weight in pounds?

3. A child weighs 20 kilograms. How many pounds does the child weigh?

4. A client weighs 154 pounds. How many kilograms does the client weigh?

Calculating Oral Drugs:
*Note the format of how much medication has been *ordered* versus the how the medicine is *dosed*.

1. A patient needs to take 0.75 g of tetracycline PO. The drug comes in 250 mg tablets. How many tablets should the patient take?

2. Ordered: Glipizide (Glucotrol) 5000 mcg PO daily. Available: Glipizide 2.5 mg tablets. How many tablets will the nurse administer?

3. Ordered: Clonidine Hydrochloride (Catapres) 100 mcg PO BID. Available: 0.1 mg per tablet. The nurse will administer how many tablets?

Liquid Drugs:

1. Ordered: 6.5 mg. Available: 10 mg/mL. Dose?

2. Ordered: 0.35 mg. Available: 1.2 mg/2 mL. Dose?

3. Ordered: 80 mg. Available: 50 mg/mL. Dose?

4. Order: Heparin 7,500 units SQ now; 3,500 units SQ daily. Available: Heparin 5,000 units per mL single-dose vial.

        a)   Administer how many mL for the now dose?
        b)   Administer how many mL for the daily dose?
        c)   How many vial(s) of Heparin are needed?

The relationship between math and medicine, or the lack thereof, can pose serious problems for patients. Consider the role of the leading "zero" in the number 0.6 versus 6. Expressing numbers for medication is serious business.

Avoiding the "naked decimal point" can be the difference between sickness and health and, maybe, life and death. Consider what could happen if a medical professional read .6 mg as 6 mg. One of the Georgia fourth-grade math standards asks students to understand "ten times as much as." Imagine the difference between receiving 0.6 mg and 6 mg of certain medications! In the same light, expressing 5 mg as 5.0 mg can result in the same confusion – a potential ten times as much dosage.

Look at the following excerpt from a recent article in the American Journal of Health-System Pharmacy (The alphabet soup of acronyms is healthcare related):

> ISMP, FDA, ASHP, NCC-MERP, APhA, AAP, USP, ONC, American College of Obstetricians and Gynecologists (ACOG), World Health Organization (WHO), and others (eAppendix B) have issued statements or endorsed recommendations to use leading zeros and eliminate trailing zeros in dose designations in all settings. The adage **"always lead, never follow"** has been suggested to help recall this recommendation in mitigating errors.
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> * *American Journal of Health-System Pharmacy*, Volume 78, Issue 7, 1 April 2021, Pages 578–605, https://doi.org/10.1093/ajhp/zxab023 **Published:** 27 February 2021

Peter, Laura, and I had a blast working with the CSU nursing students. We got to experience math *in context*. We got to experience the beauty of math. We got to feel important about the role of math in one's health and safety. We got to brag a bit about the role of math in the students' future professional lives. And, we can't wait for Dr. Herring to call on us again.

News Items for February 11th

Even More Middle School Opportunities - Frank D Brown Hall - face-to-face model sessions on February 22. Check out more listings here!

Math Masters!!!! Coming Mar 12, 2022. Get your middle team school together and sign up here: link or contact Nancy Mims.

We are seeking **experienced teachers** to work at the Mathematics Collaborative.
If you are a K-2 or high school teacher interested in helping other teachers and learning yourself, please contact Peter Anderson - Director.

PS - **Mardi Gras Parade** in LaGrange at 7 pm on the Square, February 19th … Pete is on the title float if you want some throws yell - **Math Pete!** (How did that get there?)
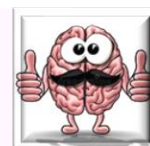
MORE NEWS YOU CAN USE

Mark your Calendars - The East Alabama council of Teachers of Mathematics
and the Chattahoochee Council of Teachers of Mathematics presents…
Understanding Division - Crossing Borders with Mathematics
March 1st at Frank D. Brown Hall **5:30 to 8:30 pm.**
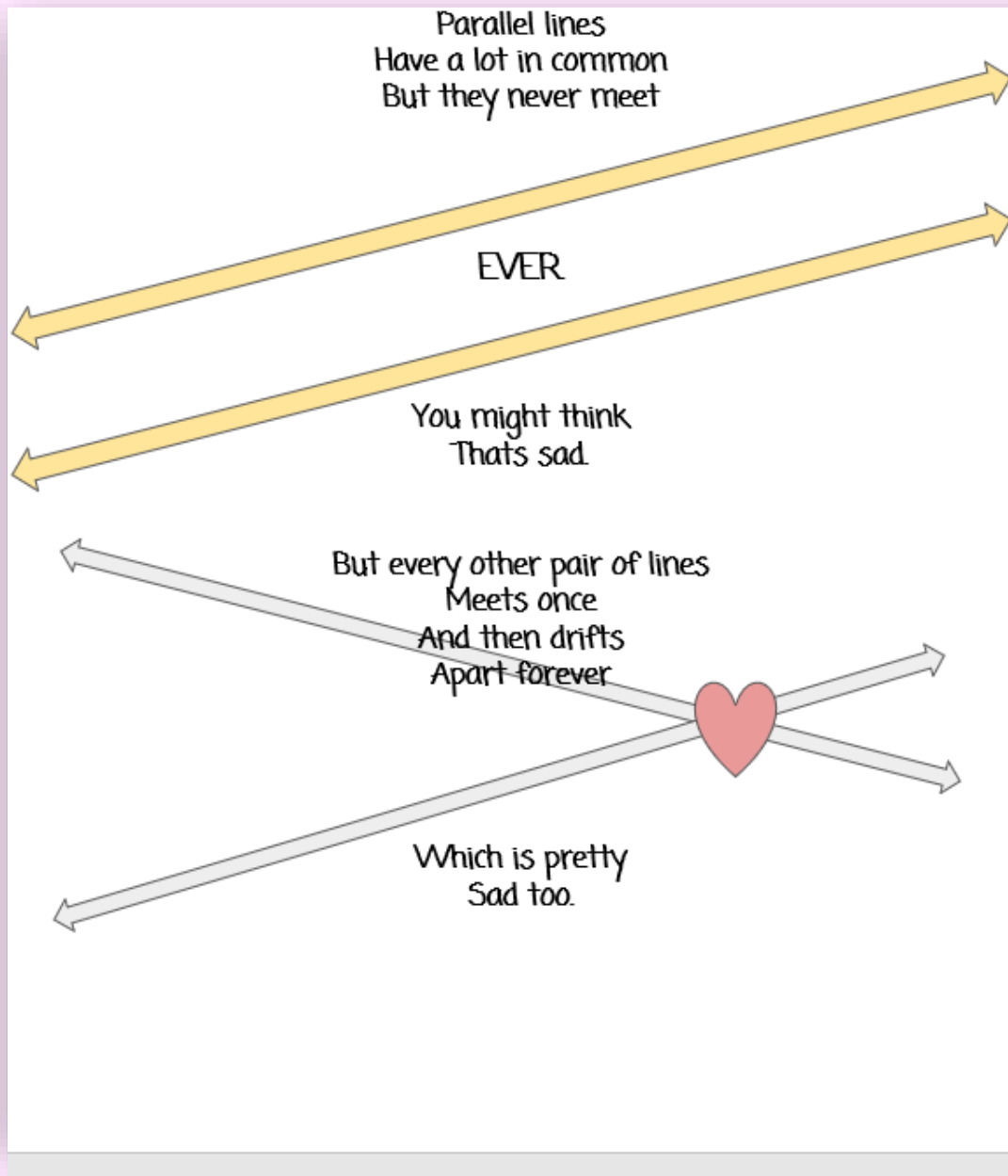Links for Registration and for Presenting

Christina Tondevold Workshop - virtual summit Feb 26 - 27 If you don't need to
see the trailer video and you are ready to register (at no cost) for the
2022 Virtual Math Summit go here now: VirtualMathSummit.com

A Sad Love Story

Parallel lines
Have a lot in common
But they never meet

EVER

You might think
Thats sad.

But every other pair of lines
Meets once
And then drifts
Apart forever

Which is pretty
Sad too.

This Valentines Day we are
Sending you wishes that your
Line coincides

With the line of your friends
And loved ones
And Math Nerds
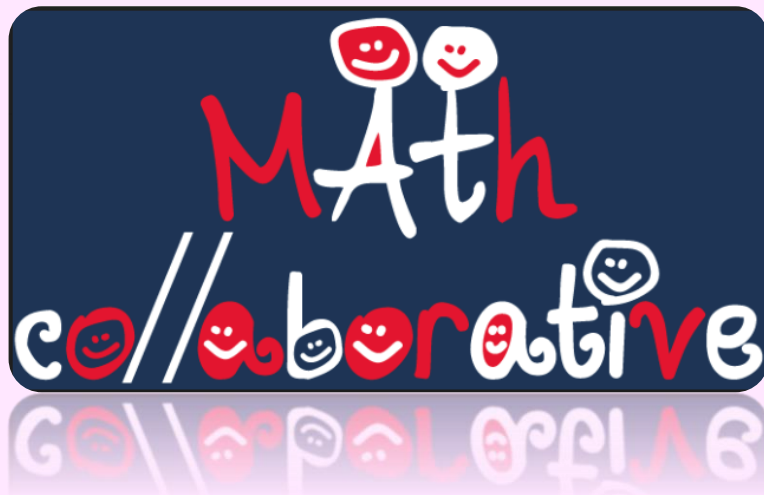Giving Infinite solutions to
All your problems

Best

The Mathematics Collaborative at CSU
Peter, Hope, Nancy, Laura, Jackie, Timmy and Fatima

P.S. For one more special message,
Enter the following equation in Desmos.

$$\left(x^2 + \left(y - x^{\frac{3}{2}} \right)^2 \right) \leq 10$$

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