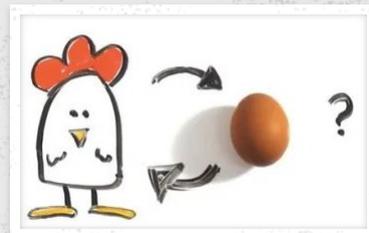


#INspirEDmath

October 2019, Volume 14

Content or Process, Which Comes First?

Are the process standards for math separate from the content standards? Can you teach the process standards without content? In the same sense, can you teach the content standards without process? For the remainder of this school year we will answer those questions. Each month we will focus on a new process standard: what it really means, what it looks like in practice, and how we can support our students in our content standards by embedding the process standards.



Video - A Real Eye Opener

If you have joined us for Mathapalooza you have seen this video. If you have not, please watch. Even better, watch, and then try it with your students. Adapt the question up or down depending on grade level. Will your students try to make sense of a nonsensical problem? Why is that? Get ready for a rich conversation and a starting point in helping students develop strategies and skills to make sense of problems and persevere through them.

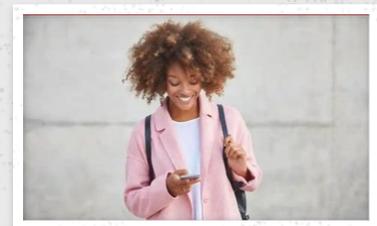
How Old Is The Shepherd?



Problem of the Month

Secondary Problem of the Month

Four friends each have a different piece of gossip. They are all in separate locations, and can communicate only via their phones.



1. What is the smallest number of **text messages** that they need to send between each other to guarantee that everyone knows all the gossip? (In other words, what's the most efficient texting strategy to make sure each person has every piece of gossip? A text message goes from one person to one person, i.e. if you send one message to two recipients that would count as two messages.)
2. What is the smallest number of **phone calls** they need to make between each other to guarantee that everyone knows all the gossip? In a phone call between two friends, each friend can share what they know with the other.

The group now has eight friends. Again, each has a different piece of gossip.

3. What's the smallest number of **text messages** that they need to send between each other to guarantee that all eight know all the gossip?
4. What's the smallest number of **phone calls** that they need to make between each other to guarantee that all eight know all the gossip?
5. Can you generalize this for n friends? What is quite surprising about the results?

Click [here](#) for the solutions and more *Can You Solve It?* puzzles by Alex Bellos. New ones are posted bi-weekly!

Elementary Problem of the Month

Eva started with 36 green pepper seedlings and some tomato seedlings. She planted 48 of them. If you knew how many tomato seedlings she started with, how could you figure out how many seedlings she still has to plant?



This problem is asking students to make sense of the information rather than provide a numerical "answer." These problems ask students for much deeper thinking than typical word problems.

Find more like this [here!](#)

The Indiana Process Standards for Math

The process standards are at the heart of effective teaching. They are what grounds good instruction. This month, we focus on practice one.

- 1. Make sense of problems and persevere in solving them.**
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.

Engaging in Sense-making and Perseverance

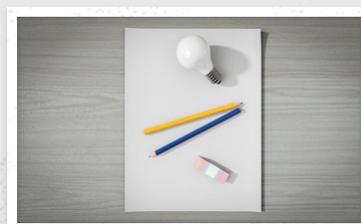
Productive math students take time to make sense of a problem. They orient themselves, notice things, generate ideas about what is important and needed to proceed, plan out their solution path, and consider the reasonableness of their solutions. Teachers can support and encourage this type of student behavior by:

- Involving students in rich problem based tasks that encourage them to persevere in order to reach a solution.
- Providing opportunities for students to solve problems that have multiple solutions.
- Encouraging students to represent their thinking while problem solving.

Click [here](#) for an organized check list of what to look for from students and teachers when engaged in each of the eight process standards.

Three Ways to Launch a Lesson

Finding a good lesson is not the final step in instructional planning. Consider new ways to engage students with three lesson launches by Desmos teacher faculty, Christopher



Launch #1 - One Question

- Show an image and ask students, "What is the first question that comes to your mind".
- Honor all questions by recording and speculating.
- Turn the class's attention to the appropriate question to investigate.

Launch #2 - Notice and Wonder

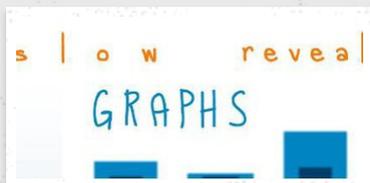
- Show an image and ask students what they notice and then what they wonder.
- Honor all contributions by recording and speculating. (This launch allows students to bring their lived experiences into what they notice and wonder.)
- Turn class's attention in direction of appropriate question to investigate.

Launch #3 - Tell a Story

- Show an image and invite students to invent and tell a story about it. (This launch provides a window into the world of each student's community, culture, and lived experiences.)

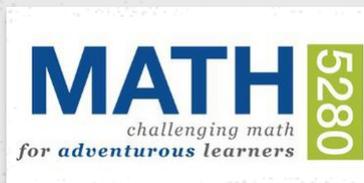
Click [here](#) for more details on each launch in the context of the Desmos activity [Charge!](#) where students use linear modeling to predict how long it will take for a smartphone to reach full charge and interpreting the parameters of their equation in context.

Resources to Support Sensemaking



Slow Reveal Graphs

An instructional routine that promotes sensemaking about data. This highly engaging routine uses scaffolded visuals and discourse to help students make sense of data. As more and more of the graph is revealed, students refine their interpretation and construct meaning, often in surprising ways. This routine increases access for students without sacrificing rigor or engagement.



Deep Algebra

Rich, complex mathematical and real-world investigations that stretch advanced learners out of their comfort zones! The projects enhance students' abilities to think independently, flexibly, and with deep understanding.



Inside Mathematics

Inside Mathematics is a professional resource for educators passionate about improving students' mathematics learning and performance. It provides resources for educators around the world who want to provide the best mathematics instruction they can for their students.

Opportunities for the Field

MATHAPALOOZA

Mathapalooza - An Extraordinary Event!

Increasing engagement in the K-12 math classroom through FREE full-day *math-specific* professional development and YOU are invited!

Indiana Department of Education's (IDOE) math specialists from the Office of School Improvement are organizing another professional development series to continue our support of a vision for ambitious instruction in the K-12 math classroom! Participants will explore and develop rich tasks that support the Eight Mathematics Teaching Practices as outlined in NCTM's publication *Principles to Action* (2014). In this interactive and engaging full day session, participants will discover how to open up traditionally closed problems to promote student discourse, provide opportunities for productive struggle, and to support students in risk-taking and sense-making. Guided implementation and opportunities for collaboration will be embedded throughout the day. Classroom teachers and coaches are the target audience, although the support of building level administrators is highly encouraged!

Details:

- Five PGPs will be given for educators who attend the full day professional development.
- Educators should bring a laptop or other device.
- Each site will have the following schedule, with minor variations in time, dependent upon location: 8:30 a.m. – 2:30 p.m. with a one-hour lunch on your own.
- Space is limited to 150 educators (75 secondary and 75 elementary) at each location so sign up quickly to reserve your seat!
- [Registration Link](#)

Analytical Algebra II Fall Learning & Collaboration

Join the secondary math specialist from IDOE for a full day of PD surrounding the new Analytical Algebra II course. Participants will:

- Participate in model lessons
- Analyze assessments
- Discuss resources/strategies
- Continue to build out community

Click on one of the dates below for registration!

[October 29](#) - Warsaw, IN

[November 6](#) - Indianapolis, IN

Seeking K-12 Science Educators

IDOE in collaboration with the Hoosier Association of Science Teachers, Inc. is beginning work on Phase II of the Science Framework. Phase II will focus on the identification of cross-cutting concepts and the implementation of the science and engineering process standards. IDOE is looking for science educators to share their expertise in this process. Interested K-12 educators should complete [this form](#).

TechPoint Foundation Youth K-8 STEM Teacher Grants

Since 2013, the IN STEM teacher grant program has been helping to eliminate financial barriers that prevent teachers from bringing their amazing STEM ideas to the classroom. The IN STEM Teacher grants allow K-8 teachers in Indiana to apply for up to \$500 to spend on classroom innovation, enhancement of existing curricula, and implementation of hands-on, inquiry-based STEM classroom activities. The application closes on November 1. More information can be found [here](#).

COMING SOON!



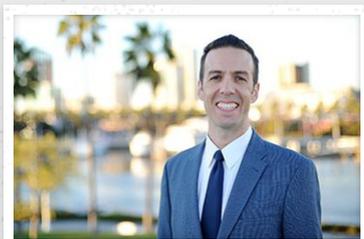
#INeLearn community, beginning November 6, IDOE will begin hosting a weekly Twitter Chat focused on a wide variety of topics in an effort to facilitate learning among educators across the state. Plan to join on Wednesday nights but start sharing and exploring resources and ideas using #INedchat today!

Who To Follow On Twitter



@SteveWyborney

Steve Wyborney is an award-winning teacher and instructional coach from Oregon. He is well known for his use of instructional technology and his work with mathematics and his passionate belief in the exceptional potential of every student. Visit his [website](#) for rich math tasks you can use in your classroom!



@robertkaplinsky

Robert Kaplinsky is a math educator who loves helping teachers. He is the co-founder of [Open Middle](#) and author of [Open Middle Math](#). He often shares valuable resources and lessons that teachers can use with students to help them love mathematics.



@buildmathminds

Christina Tondevold is a former middle school math teacher who learned and taught math the traditional way but, is now a self-coined "Recovering Traditionalist" and a teacher educator who is passionate about helping teachers learn about how children think about mathematics. Visit her [website](#) for PD in your PJs.

Supporting Our Early Learners

Act Early Indiana

The CDC's "Learn the Signs. Act Early." (LTSAE) has FREE research-based, parent-friendly resources on child development for children ages 0-5 to help boost family engagement and professional development for educators.

Math Educator Spotlight - Ashley Grimes

As an elementary student, I always loved math! My grandfather loved to tell me story problems and watch me work them out quickly without a pencil and paper. I had a "different" way of

math thinking and struggled to comply to show work when my teachers had requested I do so. You name the problem, and I could quickly solve it mentally! I knew in third grade I wanted to be a teacher when I grew up. Throughout high school, I participated in the cadet teaching program and I quickly began to spend all of my free time with first graders!



Life quickly led me in a different direction as I worked full time during my undergraduate degree and was forced to pursue my Bachelor's in Business at Indiana University East in 2010. I finished my degree and immediately searched for a program to pursue a teaching license. I completed the Transition to Teaching program in 2013 at IUPUI. The next summer I completed my Master's in Urban Elementary Education. I reside in Greenfield with my husband, two daughters, and three dogs.

I spent 6 years teaching second grade at the same school I completed my student teaching placements. This year, I moved to third grade and have the privilege of looping with some of my second graders. The rewards are abundant! It is an amazing feeling to see the look on their faces when they "get" a math concept or have devised a new way to solve a problem. Students have realized the value of multiple math strategies and are excited to use multiplication to solve problems we face throughout our days together! While many students love the excitement of online math programs, my students often choose to work on math centers [Marilyn Burns] if given a choice. There is no reward greater than influencing the minds of young people!

Math Educator Spotlight Nominations Needed (Click Below)

Mathematics Educator Spotlight Nomination

We are looking for rock star math educators who are innovative and inspiring; educators who lead, learn, and collaborate with humility and passion. If you know someone (or are that someone) click the button and nominate them (or yourself)!

Your IDOE Mathematics Team



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