

## Math Bash Session Descriptions

---

### Friday Math Bash Sessions

Friday Math Bash sessions are 30 minutes long and there are 2 session blocks. Participants will attend 2 sessions.

**1. Hands-on Graphing** Grades 9, 10, 11

Kevin Dykema

*Mattawan Middle School – Mattawan, Michigan*

Topics: Algebra, Adv. Algebra, Manipulatives and Graphing

Do your students need hands-on activities to help develop their understanding of graphing concepts and to help actively engage them in learning new material? We will uncover the benefits of using manipulatives as a tool to help students better understand math as well as specific ways to use manipulatives for graphing.

**2. Math Nspired and Connecting Math & Science with TI and Vernier** Grades 9, 10, 11, 12

Sean Bird and Ron Thomas

*Covenant Christian High School – Indiana and Texas Instruments – Illinois (respectively)*

Topics: Algebra, Adv. Algebra, Physics, Graphing Calculator Technology, Assessment

Introduction to inquiry-based resources focused on improving instruction of tough-to-teach and tough-to-learn algebra and geometry topics. Connect math & science with a strength competition using the TI-Nspire's data collection capabilities and Vernier's hand dynamometer.

**3. Intensified Algebra I – A comprehensive approach to algebra for struggling learners** Grades 9, 10

Regeta Slaughter

*University of Illinois at Chicago – Chicago, IL*

Topic: Algebra

Students who struggle in mathematics need more than simply more instructional time to be successful. In addition to a rigorous mathematics core, a successful program needs to also address among issues such as social, affective, language skills, and repair misconceptions. *Intensified Algebra 1* is a curriculum project between the University of Illinois at Chicago, The Charles A. Dana Center, and Agile Mind, Inc. that has attempted to provide such a curriculum and tools for teachers and students to address one of the biggest challenges in schools today – Algebra for All. The project, now in its 3rd year, has expanded to more than a dozen urban districts in 150 classrooms. Hear more about how *Intensified Algebra 1* is being implemented in double period algebra classrooms in Chicago area schools.

**4. Real Science in Real Places** Grades 9, 10

Mishawna Manning

*Rush University Medical Center - Community Affairs: Science and Math Excellence (SAME) Network – Chicago, IL*

Topics: Algebra, Earth Science

It is my goal to encourage the use of digital devices in science and math classes to promote accuracy of data collection. In this session participants will conduct mini labs using the Vernier LabQuest, sensors and probes in multiple spaces for multiple purposes. They will also experiment using the versatile data collection device, desktop software and other technological components.

**5. Even More Games!** *Grades 9, 10, 11, 12*

Sharon Rak

*Roosevelt University and Northeastern Illinois University – Chicago, IL*

Topics: Algebra, Interactive Games

Come join us for a “make-it take-it” session of fun math games. This session will include instant insanity cubes, algebra tiles and the challenging *five* piece tangram puzzle used with rational numbers. Problem solving will be stressed and your brain will too! With RTI, small group instruction is mandatory and this session will give teachers some options for making this possible. Problem solving will be integrated with geometry, algebra, and rational numbers.

**6. Making Mathematics Accessible to Students with Special Needs** *Grades 10, 11*

Lamont Holifield

*CICS Ralph Ellison High School – Chicago, IL*

Topics: Statistics, Special Education

Are you at a loss trying to formulate projects to actively engage students in mathematical learning? Are you looking for innovative ways to connect mathematical topics with relative topics in the lives of today’s teens? Are you tired of the students walking away thinking that mathematics is a subject that’s disconnected with the other classes? Then, join Mr. Holifield in this workshop where we will explore and be exposed to strategies designed to actively engage teens. This session will also include a segment which deals with making these concepts accessible to all learners, including those with special needs. There will be real examples of projects produced by Statistics students with special needs.

**7. Grockit: A Social Network for Learning** *Grades 8, 9, 10, 11, 12*

Matt Johnson

*Grockit – San Francisco, CA*

Topics: Math & Language Arts, Assessment, ACT Test Preparation

Grockit is the social network for learning where students gain an academic edge through live group study and adaptive solo practice. Join us as we discover how the Grockit online learning platform is transforming the way educators teach and the way students learn.

Grockit helps teachers deliver more individualized instruction, extends learning outside of the classroom in ways that students want to learn, and provides detailed insights into each student's strengths and needs. Through the application of social networking and online gaming technology, the Grockit learning platform offers students a fun and engaging way to master academic skills and to prepare for standardized tests. The diagnostic, prescriptive and adaptive nature of the platform ensures that each student receives an individualized learning experience.

**8. The Young People’s Project Presents: YPP Games for Mathematical Understanding** *Grades 6, 7, 8, 9, 11, 12*

Jessica Hanzlik, Michelle Velez, Latavia Hinton & Nandi Rease

*Young People’s Project – Chicago, IL*

Topics: Algebra, Games, Manipulatives

Why play games to learn math? The answer seems fairly intuitive. Games are fun and engaging, and they are a natural part of human culture, especially youth culture. They build camaraderie, team spirit, and they can help people to learn. In YPP we work to capitalize on the potential for games to help young people learn math while having fun.

Participants will sample a variety of games that offer entry points for middle and high school students to engage deeply with math concepts in fun ways, and to begin preparing for algebra. For high school students, the games are opportunities for them to learn, teach, lead, and organize others, as well as to deepen their own math understanding. Get a taste of YPP's Multiplication, Road Coloring, Crypto Club, and Algebra Labs Games.

**9. Chicago Teachers’ Center Afterschool Math, Science & Technology Pilot Programs** *Grades 6, 7, 8, 9, 10, 11, 12*

Aaron Cortes  
*Chicago Teachers' Center – Chicago, IL*

Topics: Math, Science, Technology, Afterschool Programs

Participants will get a glimpse of how the CTC Upward Bound Math & Science and Saucedo Elementary School afterschool programs have designed and implement real-world projects that integrate technology with math and science content. These programs introduce students to architecture and robotics while integrating the application of algebra, trigonometry, physics, computer programming and engineering.

Saucedo Elementary School has instituted an Architecture Club in collaboration with the 21<sup>st</sup> Century Program during which students develop architectural designs that will be submitted to the Chicago Architectural Foundation and the CPS Architectural Annual Competition.

The UBMS Robotics Club held at Mather High School teaches students engineering as well as math and science. Student teams in this club will build robots and participate in a VEX robotics competition.

**10. Chicago Teachers' Center High School Saturday Math, Science & Technology Pilot Programs** *Grades 9, 10, 11, 12*

Aaron Cortes, Roxana Hadad  
*Chicago Teachers' Center – Chicago, IL*

Topics: Math, Science, Technology, Saturday Programs

Participants will get a glimpse of how the CTC Upward Bound Math & Science Program has developed pilots for its academic year enrichment program. The two pilots for project-based learning include "Sustainable Energy and Digital Visualizations", where students explore careers in engineering in collaboration with Columbia College, and "Digital Photography and Animation", where students learn about careers in visual arts and design through distance or *virtual* learning in collaboration with international industry professionals.

## Workshop Session Descriptions

---

### Saturday Workshop Sessions

Saturday workshop sessions are 1 hour and 15 minutes long and there are 3 session blocks. Participants will attend 3 sessions.

**1. Triangle Concurrencies with "GeoGebra" Grade 10**

Cheryl Kneubuhler

*Topics:* Algebra, Geometry, Dynamic Software Technology

"GeoGebra" is a free dynamic software program that is much like Geometer's Sketchpad. In this session, we will use this tool to construct the circumcenters, incenters, centroids, and orthocenters of triangles and integrate these constructions with coordinate graphing and solving real-life application problems. We will solve real-life problems involving the construction of triangle concurrencies such as finding the location to which a couple should move in order to live equidistant from each of their three grown children, and finding the location at which a fire station should be built so that it is equidistant from the three highways connecting three rural towns.

*Presenter Bio*

Cheryl Kneubuhler currently teaches mathematics education courses at Ball State University. She has been a professional developer for the Teaching Integrated Math & Science Project at the University of IL at Chicago, and a math specialist and professional developer for the Chicago Math & Science Initiative. Additionally, she has taught math education courses at Loyola University Chicago and at the University of IL at Chicago, and has been a high school math teacher.

**2. Manipulatives for Algebra Grades 9, 10, 11**

Kevin Dykema

*Topics:* Algebra, Advanced Algebra

Do your students struggle with algebraic concepts? See how your students can benefit from a visual approach to algebra and learn how manipulatives and other hands-on activities can help promote their understanding of algebraic concepts. Topics include integer operations, solving equations, polynomial expressions, graphing, and more!

*Presenter Bio*

Kevin Dykema has taught 8th grade math for 16 years. He has a master's degree in math education from Western Michigan University, where he has also taught several undergraduate math courses for preservice elementary teachers. He also conducts many professional development sessions on using manipulatives in the math classroom.

**3. CPS: Cell Phone Substitute Grades 9, 10, 11, 12**

Sharon Newman

*Topics:* Trigonometry, Wireless Tablet, Assessment

There is a lot of competition for the attention of students in the classroom, most recently, students are distracted by their cell phones. Replace those cell phones with clickers. Learn how to incorporate cutting-edge technology in your trigonometry lessons. During this session you will see how a wireless tablet, and clicker system can be incorporated in your classroom! We will use it to take attendance, play games, and assess students instantly. Technology provides an opportunity for teachers to do so much more than ever before. Let's be honest.....Who couldn't use more hands, eyes, or hours in the day?

*Presenter Bio*

Ms. Sharon Lynn Newman has a B.S. from Illinois State University in Mathematics Secondary Education, and her M.Ed from the University of Illinois at Chicago. She is currently in her fifth year of teaching, and applying for National Board Certification.

**4. Integrating Literature and Literacy Strategies into the Math Classroom** *Grades 9, 10, 11, 12*  
Lamont Holifield

*Topics:* Geometry, Trigonometry, Internet and Graphing Calculators

Have you been able to make a connection between Mathematics and English Literature? Have you been able to see a mathematics teacher as being a chief contributor to students' ability to become proficient readers? If the answer is no or not clearly, this workshop is for you. In this workshop, we will actually look at novels and other tools, which will allow the mathematics teacher to show students clear connections between mathematics and reading. This workshop will also aid teachers in becoming better collaborators with their colleagues across departments, setting the stage for cross-curricular lessons/lesson planning. Actual examples will be presented and you will walk away with some ready-to-use tools and templates to aid our students in becoming academically sound. Activities will include the selection of appropriate novels and the use of literacy strategies to teach mathematics; effectively teaching vocabulary using various media; engaging students by using effective Webquests.

*Presenter Bio*

Mr. Lamont Holifield is a Mathematics Teacher at CICS-Ralph Ellison High School. He holds a B.A. in Mathematics (1998), M.A. in Training and Development (2006) and M.A. in Secondary Education (2010), all from Roosevelt University. He is an active member of NCTM and ASTD.

**5. Teaching Algebra with Engaging Hands-on Activities** *Grades 9, 10*  
Edna Bazik

*Topic:* Algebra, Problem Solving

Mental math, problem solving and hands-on activities will be used to engage participants in algebraic and geometric thinking. Manipulatives will provide a geometric interpretation of symbolic manipulation and make powerful connections to other topics in mathematics. Involve participants in collaborative discussions in Algebra, Geometry and Advanced Algebra by providing them with materials to think with and talk about. Learn how to extend student's mathematical thinking through the use of a variety of engaging problems and activities and incorporating the Common Core State Standards mathematical practices.

*Presenter Bio*

Mathematics Education Program Coordinator and Associate Professor, Math Ed, National-Louis University, 2005-present; Mathematics Coordinator and Middle School Math Teacher, Hinsdale School District #181, Hinsdale, IL; Mathematics Specialist, Oak Park School District #97, Oak Park, IL; Eastern Illinois University, Math Dept, Charleston, IL; Illinois State University, Math Dept., Normal, IL; Concordia University, River Forest, IL; Co-author of 12 Math Ed books  
Math Ed Consultant, Local, State, National and International Levels

**6. Teaching Mathematics and Social Justice through Data Analysis** *Grades 11, 12*  
Natasha Fast and Derrick Bullie

*Topics:* Trigonometry, Precalculus, Statistics, Data Analysis, Social Justice

How can we incorporate ideas and discussions about social justice into a mathematics classroom? How can we make Mathematics more real and relevant to our students? As Math teachers at a social justice high school, these are questions we may struggle with as we plan each lesson. We will present two short units that use analysis of real data describing school funding, poverty, and violence in Chicago to teach Math concepts and introduce social justice ideas. We will also offer suggestions for some other sources of data that could be used to create new social justice units. Participants will engage in discussions about how to incorporate social justice and real data into lessons that cover a wider variety of Math topics and standards.

*Presenter Bios*

Natasha Fast is a teacher at Uplift Community High School, a social justice school in Uptown, on the North side of Chicago. She currently teaches IMP4 and hopes to increase her students' interest in mathematics by giving them mathematical tools to critically analyze their own lives and their world.

Derrick Bullie is also a teacher at Uplift Community High School. He is currently in his fourth year of teaching and second year of teaching at Uplift. This year he is teaching Geometry and Algebra 2, and last year he taught Algebra 1. Derrick is strong advocate for incorporating socially relevant issues, events, and circumstances into his curriculum with hopes that students see that math can be and has been used to shape their world.

#### **7. The Architect's Dimensions** *Grade 9*

Kelly Shepard

*Topics:* Algebra, Technology integration, Teacher collaboration

Measurements, proportions, and scale? Oh, why? Often, students fail to see the connection between the mathematics concepts they learn in class and the world outside of their classrooms. Through this project, we will explore the world of architecture and how math fits into that world. Students become architects as they use measurement, scale, proportions, and problem-solving strategies to create floor plans for their classroom and bedrooms. This project encourages students to engage each other in conversations about measurement in real life. The scope of this project is flexible and may include research on the work architects do, as well as the education they must acquire. In this session, teachers will take measurements, draw floor plans, visit interactive websites that support the project and review sample student work from completed projects.

##### *Presenter Bio*

Kelly Shepard teaches middle school math at Carnegie Elementary School. She earned a B.S.Ed. and an M.Ed. from Loyola University of Chicago. She's working toward a Ph.D. in science education at the Illinois Institute of Technology. Additionally, she is an adjunct professor in the mathematics education department at National-Louis University.

#### **8. Algebra Labs: Related Rates and Social Justice** *Grade 9*

Jessica Hanzlik

*Topics:* Algebra, Math Pedagogy

In this session participants will be taken through activities from our Algebra Labs. The purpose is to connect the mathematical concept of rates to other ideas students may instinctively understand, such as the variety of relationships between education and poverty. This includes a discussion about the connections between pairs of words, ranging from "normal" math terms like time, distance, speed, height, temperature, etc., to bigger ideas related to poverty, race, education, health, etc. Participants will collect data from chosen repetitive actions, plot and analyze their data points, and make predictions. Finally, they draw graphs depicting the relationships among the words and ideas from the introduction.

##### *Presenter Bio*

Jessica Hanzlik is an Algebra Labs Coordinator for the Young People's Project of Chicago. She works with high school and college math literacy workers in several elementary schools in the Chicago neighborhood of Woodlawn.

#### **9. Examining slope, Y-intercept, algebraic expressions, and function rules in slope-intercept form through TI N-Spire calculators and TI Navigator technology** *Grade 9*

Jeff Whitcomb and Chaidan Upp

*Topics:* Algebra, TI N-Spire calculators and TI Navigator technology

We will investigate algebraic expressions, linear functions, and slope through TI N-Spire technology. Using TI N-Spire calculators and the quick poll feature of the Navigator system, a wireless classroom tool, we will show participants how to send a question to each student's calculator. The participants in the room will act as students and respond to open-ended questions as well as yes/no questions, which will be displayed using an LCD projector. A discussion of the question, responses, and uses in the classroom will follow.

Using N-Spire and Navigator technology, the teacher can "capture" and display all students' calculator screens. The teacher can use a specific student as a "live presenter" and their work on the calculator will be immediately displayed through the LCD projector. This allows the teacher to gauge student understanding and adjust instruction.

Similar to sending a file attachment via e-mail, the teacher can send an entire activity file to every student for them to complete on the calculator. This optimizes the interactive capabilities of the TI N-Spire, and allows students to work at their own pace.

Finally, Loyola's Countdown Challenge videos will be presented as an additional resource for struggling students.

#### *Presenter Bios*

Jeff Whitcomb is currently in his 4th year at Dunbar High School teaching Algebra, Double Period Algebra, and honors Geometry to 9th and 10th grade students. He has undergraduate degrees in Math and Psychology from University of Illinois Urbana-Champaign and a master's degree in Education from National-Louis University.

Chaiden Upp is currently finishing her master's in Elementary Education at Loyola University with a middle school math endorsement. Simultaneously she is student-teaching at Joseph Sears School in the sixth- and eighth-grade math classrooms. She completed her undergraduate degree at DePauw University and obtained a B.A. in Education Studies.

### **10. Using digital gaming to supplement mathematical learning and reasoning** *Grades 9, 10*

Caroline C. Williams and Seann Dikkers

*Topics:* Algebra, Math Video Games

We all know students play computer games, but might they have a place in our classrooms too? If so, how? What pedagogical approaches are being used with success and how can I use them too? In this session we'll briefly overview strategies used across the country to integrate digital games into traditional classroom settings, current research pointing to the effectiveness of games, and finish with a hands-on blitz of awesome games that are being used and show great potential in classroom settings.

#### *Presenter bios*

Caroline C. Williams is a Ph.D. student in Mathematics Education at the University of Wisconsin - Madison, and is specializing in video games and mathematics learning.

Formerly a teacher and high school principal, Seann Dikkers now works toward the translation of gaming theory into leadership and classroom tools and applications at the University of Wisconsin - Madison. He also maintains the [www.gamingmatter.com](http://www.gamingmatter.com) site for leaders, teachers and parents interested in educational technology.

### **11. Ethno-Math/Science and Passionate Research: Making math and science personal and relevant** *Grades 8, 9, 10, 11*

Tanya Cofer and Isodor Ruderfer

*Topics:* Algebra, Science, research, writing

Please join us for an introduction to some tools and ideas designed to use culture and personal experience to motivate learning math and science. In June 2010, we ran a workshop ("Ethno-Math/Science Passionate Research") for in-service and future teachers centered on these ideas. Participants wrote about a personal memory tied to their cultural background. Faculty and peer mentors helped the participants identify and further explore math/science topics connected to that writing. Several participants wrote about memorable meals or dishes, and using recipes, we calculated "meal footprints" to determine how much land was needed to grow the each dish. Other stories led to work using the Consumer Price Index to calculate changes over the years in rent values or the cost of heating a home.

During our iMATHination session, we will present samples of this work and walk you through the steps and web-based tools you can use to take students from personal stories to mathematical and scientific exploration. Whenever possible, secondary algebra concepts will be emphasized. Please bring an idea for (or even a draft of) a personal/cultural memory/story that we can use for demonstrating these steps and tools.

#### *Presenter bios*

Tanya Cofer is an Associate Professor of Mathematics at Northeastern Illinois University. She came to Chicago six and a half years ago so that she could work with teachers who work with kids in the city. She has a Ph.D. in Mathematics and a Post-Doc in Mathematics Education. Her father is a high school math teacher in rural Georgia and her mother is a Puerto Rican author and poet. She sees teaching as a calling and a career, not just a job. As a bicultural woman, she has found strength in mathematics and wants her students to share that passion and empowerment.

Isidor Ruderfer has a M.S. in Conservation Ecology and Sustainable Development from the Institute of Ecology at the University of Georgia. He has been at NEIU since 2004, where he has been developing and teaching courses in a program for future middle-school math and science teachers (MSTQE) as well as teaching General Education biology courses. His academic background is interdisciplinary and cross-cultural, with a focus on understanding science in a social context. He worked with small farmers in southern Costa Rica as part of his graduate research, and before that, he worked as an environment/development photo-journalist and research intern in Bolivia.

**12. Explore a Frontier of Inter-“Activity” with TI and NASA** *Grades 9,10,11, 12*  
Sean Bird and Ron Thomas

*Topics:* Algebra , Physics, pre-calculus, graphing calculator technology

Have fun with real-world applications and activities for algebra, pre-calculus and calculus. There is no better way to teach slope and derivatives than to have students generate a graph of their own motion using a CBR2 and the TI-Nspire. Several classroom-tested TI Math and NASA activities that are easy to use in the classroom with the TI-Nspire Navigator will be explored.

*Presenter Bios*

Sean Bird has taught in Indianapolis for 15 years using a variety of handheld and presentation technology. He serves as a T<sup>3</sup> Instructor (Teachers Teaching with Technology). He has also authored activities for Pearson, NASA, TI-Math, and Math Nspired. He is a frequent presenter at math/science conferences, including NCTM, NSTA, T<sup>3</sup>.

Ron Thomas is an Educational Technology Consultant for Illinois and Wisconsin for Texas Instruments. He has a Bachelor's Degree in Mathematics from Illinois Wesleyan University with minor in Education, and a Masters Degree in Business Administration from Duke University. Ron also taught high school mathematics for 3 years.

**13. 4MAT 4 Algebra: A Whole New Way of Learning Algebra** *Grades 9, 10*

Michael McCarthy

*Topic:* Algebra

Long lectures and practice exercises are not enough to motivate and engage students in learning algebra. They must first see the value, apply it in their lives and put it to use in the world. 4MAT 4 Algebra units offer practical, interactive and hands-on exercises for engaging students in algebra. It includes overarching concepts that students relate to and can apply. This session will introduce teachers to the 4MAT model, and provide step-by-step guidance in how it applies to teaching key Algebra I units. We will walk through sample units on linear equations, the language of algebra, and probability to show teachers how 4MAT can help increase student engagement in learning algebra I content. These units are highly interactive and will help get students up and out of their seats applying algebra concepts through hands-on projects and interactive practice and creative project choices. Each of these units is designed to help students see why algebra is important. Your students will never again say: "when am I ever going to use this?" as they will be using it as they learn it.

*Presenter Bio*

Michael McCarthy is the CEO of About Learning, Inc., a leading publishing and training company located in Chicago. About Learning is the exclusive provider of 4MAT Training and Consulting programs throughout the world.

Michael works with schools and school districts across the country to help them understand and apply the principles of 4MAT with the highest quality and integrity. This includes such noted organizations as the Chicago Public Schools, Northeast ISD, Aveda Corp., the U.S. Navy, Yonkers Public Schools, and many other schools and districts throughout the country to help them improve their educational outcomes by creating more dynamic learning.

**14. Mini-Squares** *Grades 8, 9, 10, 11, 12*

Michael Maltenfort, David Schmitz

*Topics:* Algebra, Advanced Algebra, Geometry, Dancing

This is not your grandparents' barn dancing! Mini-Squares is a modern offshoot of square dancing, emphasizing patterns and formations rather than hoopin' and hollerin'. Dancing in mini-squares provides both good exercise and also mental math stimulation.

Mini-Squares (<http://www.g2ideas.com/msg/index.html>) provides music and choreography which are ready-to-use, allowing those with no experience to begin dancing immediately. The dancing itself is both fun and mentally challenging, forcing participants to listen carefully and to dance precisely.

Participants will learn the beginning steps of Mini-Squares, and then we will discuss the mathematical content inherent in the activity. For example, we will find the group-theoretic order of certain square dance calls. Symmetry is one math topic that is readily explored through Mini-Squares, as each dancer always has the same "opposite," a dancer who shares 180-degree symmetry. Mini-Squares can also lead to instructional exercises in visualization and geometry. We will explore symmetry, groups, and transformations

*Presenter Bios*

Michael Maltenfort is an Associate Professor of mathematics at Truman College. He calls dances in the Chicago area and around the country. He received his Ph.D. in math (algebra and algebraic geometry) from the University of Chicago in 1997 and has always been interested in connecting square dancing with group theory.

David Schmitz is an Associate Professor of mathematics and department chair at North Central College, where he annually teaches a two-week square dance course. This course and David's continuing work with these students have been featured in the Chicago Tribune and the Chronicle of Higher Education.