NCTM Annual Conference

Boston, MA - April 15-18, 2015

Technology Sessions

Session	Title/Speaker	Time	Description	Key word(s)
Thu 20	**Blended Learning, Blended Pedagogies, Blended Content** *Speaker: David Dockterman*	8:00-9:00 153 C (BCEC) Grades: *3 to 8*	Successful blended learning involves more than a mix of teacher-led and technology-based activities. It requires a blend of pedagogies to support the varied instructional needs of a rigorous curriculum that demands procedural fluency, conceptual knowledge, and application. Come see how to blend these elements and maintain mathematical coherence.	Technology
Thu 32	**Technology Used in the Flipped and Traditional Classroom** *Speakers: Beverly Heigre & Elizabeth Milanovich*	8:00-9:00 159 (BCEC) Grades: *9 to 12*	Learn how we use Google products, other freeware, and existing classroom technologies in our flipped and traditional class. We'll show you how we've successfully implemented these strategies in our classes from Algebra 1 to Calc BC. Join us to see how you can enhance your classroom instruction whether you have flipped none, some, or all of your lessons.	Google products, freeware, technologies
Thu 52	**Functions as Dances: Experience Variation and Relative Rate of Change** *Speakers: Daniel Scher & Scott Steketee*	8:00-9:00 157 B/C (BCEC) Grades: 6-12	How better to explore rate of change than as independent and dependent variables dancing together? We'll vary *x* and *y* by doing both real and computer-based dances based on geometric transformations, dynagraphs, and Cartesian graphs of various functions. Bring a laptop or iPad with Sketchpad. Leave with student-ready geometry and algebra activities.	iPad, Sketchpad
Thu 53	**Here's How to Incorporate "Big Data" into Your Statistics Class!** *Speakers: Patricia Baggett & Andrzej Ehrenfeucht*	8:00-915 258 B (BCEC) Grades: 6-12	Come and engage in classroom-tested activities involving three aspects of statistical investigations: Gather and analyze experimental data from hands-on-tasks; use TI-84 programs to simulate sets of "big data" for these tasks; and finally, investigate the mathematical models that explain the patterns observed in both real and simulated data.	TI-84 graphing calculator

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Thu 57	**Regression for Non-Linear Data: Don't Let Students Go Model Shopping** *Speaker: Julie L. Graves*	8:00-9:15 210 C (BCEC) Grades: 9-12	If we want to find a model for a quadratic data set, we have the option of having our calculator perform QuadReg. This regression technique does not help students deepen their understanding of transformations or shed light on the graph of the resulting model. We will use linear regression to find quadratic models in an inventive way.	Graphing calculator
Thu 59	**Integrating Project-Based Learning: Teaching Mathematics across the Curriculum** *Speaker: Anthony Matthew Rodriguez*	8:00-9:15 205 A (BCEC) Preservice/ inservice	Project-based learning (PBL) is a dynamic method for developing math models, and for increasing communication and problem solving in our classrooms. It also promotes collaboration with colleagues within and outside our discipline. In this session you will learn how to design and implement PBLs to both master standards and create a community of learners.	PBL, dynamic, modeling
Thu 83	**Statistics and Probability: Implementing the CCSS Vision and Spirit** *Speakers: Gail Burrill & Thomas P. Dick*	9:30-10:30 161 (BCEC) Grades: 6-12	The vision of the CCSS statistics strand is more than “another year, another graph.” It is about reasoning from data, recognizing variability, understanding that statistics is not mathematics, and making decisions based on statistical thinking. How can we make this vision a reality in our classrooms and how can interactive dynamic technology help?	Dynamic technology
Thu 86	**Keeping Students Engaged: Math in Art, Technology, and History** *Speaker: David M. Peabody*	9:30-10:30 209 (BCEC) Grades: 9-12	Math in Art, Technology, and History class is designed for students who are more interested in STEAM (the A stands for ART) than STEM. The class explores mathematics through units such as the Golden Ratio, Math and Music, Tessellations, Architecture, Fractals, Origami, the History of Numbers and Counting, and Computer Animation.	Computer Animation, Technology
Thu 97	**To Use or Not to Use? That Is the Question!** *Speaker: Kay L. Neuse*	9:45-11:00 210 A (BCEC) Grades: 3-5	Do calculators have a place in the elementary classroom? Of course they do! This session will assist teachers in rethinking how calculators might be used in grades 3–5 mathematics lessons. Every attendee will walk away with classroom-ready ideas that are student centered and inquiry based. Bring your technology and have "sum" fun!	Calculators, technology

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Thu 106	**Collecting, Analyzing, and Interpreting Data** *Speaker: Kimberly Dawn Tarnowieckyi*	9:45-11:00 253 C (BCEC) Grades: 6-12	You will have the opportunity to participate in lessons on how to incorporate modeling into linear functions (bivariate data). Participants will have the chance to be a student working on collecting, analyzing, and interpreting data. The math labs will vary from measuring the circumference of a Tootsie Pop to using CBRs and calculators.	CBRs & calculators
Thu 107	**Learning Difficult Concepts in Algebra through iPad Apps** *Speakers: Steve Rhine & Rachel Harrington*	9:45-11:00 252 A (BCEC) Grades: 6-12	iPad apps can do much more than provide students with practice. In this session we will learn about multiple free apps from the Center for Algebraic Thinking that help students develop understanding in algebra. The apps provide students with the opportunity to develop and test hypotheses and construct meaning with challenging algebraic topics.	iPad apps
Thu 109	**Integral Defined Functions: Discovering the Fundamental Theorem of Calculus with Technology** *Speaker: Mike Koehler*	9:45-11:00 204 A/B (BCEC) Grades: 9-12	Integral defined functions can serve as an introduction to the fundamental theorem of calculus. Paper-pencil and technology activities focus on connections between these functions and the derivative function. Hands-on investigations designed to help students improve their conceptual understanding of the FTC and AP problems involving FTC.	Technology
Thu 121	**PBS KIDS Ready-to-Learn Resources for Early Math Learning** *Speakers: David Lowenstein, Pamela Johnson and Francis (Skip) Fennell*	11-12 103 (BCEC) Grades: PreK-2	Learn how free resources from the U.S. Department of Education–funded Ready to Learn program can support the development of math skills in early learners. Experience Common Core–aligned resources that reinforce learning in school, at home, and in expanded learning settings. Hear the latest research on transmedia and early math skill development.	transmedia
Thu 149	**Online Teaching and Learning Communities** *Speakers: Elena Kaczorowski & Elaine Siga*	11:30-12:00 258 B (BCEC) 9-12 Burst	Long-distance online classes give students the opportunity to take courses that are not offered in their schools. We will share our online high school linear algebra teaching experience.	online

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Thu 165	**Architecture in Geometry** *Speaker:* *Robin M. Mankel*	11:30-12:00 157 B/C (BCEC) 9-12 Burst	By connecting geometric concepts to real-world photos, videos, and technology, teachers can engage students and create meaningful and lasting learning experiences. I will present a variety of means by which teachers can incorporate architecture from around the world to create lessons that are exciting, multicultural, and student relevant.	Technology
Thu 170	**B.L.A.S.T. into Online Professional Development** *Speakers:* *Donna D. Williams &* *Erin M. Nguyen*	12:30-1:30 211 (BCEC) Preservice	Online learning is increasing in the education of students as well as teachers. Online professional development allows teachers to control the time, place, path, and pace of their learning. This session will explore the B.L.A.S.T. (Bringing Learning and Standards Together) modules that are created for teachers.	Online
Thu 174	**Multimedia Formative Assessment and the Standards for Mathematical Practice** *Speakers:* *Justin K. Dimmel &* *Patricio G. Herbst*	12:30-1:30 210 B (BCEC) General Interest	We share multimedia items that are designed to assess student proficiency with the Standards for Mathematical Practice (SMP). The items provide occasions for students to comment on and offer alternatives to example work on tasks that target specific SMPs. We will consider how such items could be used for formative assessment of SMP aptitude.	Multimedia
Thu 187	**Motivating Our Students with Real World Problem-Based Lessons** *Speaker:* *Robert B. Kaplinsky*	12:30-1:30 Grand Ballroom (Westin) General Interest	When our students are trying to find answers to problems they care about, they become far more motivated to learn. We will explore several such problems with a focus on classroom implementation and links to the Common Core mathematical practices. Participants will leave with access to over 100 free problems available on the Internet.	Internet
Thu 194	**Powerful, Playful Learning** *Speakers:* *Susannah Gordon-Messer &* *Louisa Rosenheck &* *Carole Urban*	12:30-1:30 255 (BCEC) Grades: 6-12	Game-based learning is an effective way of engaging students with content, CCSS practices, and computational thinking skills. Learn about free online games and simulations from MIT and how to incorporate them into your teaching. These tools are useful for both middle and high school students.	computational thinking, online, simulations

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Thu 198	**GeoGebra + Complex Number Arithmetic: Implementing CCSSM** *Speakers: David R. Erickson & Armando M. Martinez-Cruz*	12:30-1:30 160 A (BCEC) Grades: 9-12	High school students learn complex number arithmetic most frequently in the abstract. By using freely available GeoGebra software on an iPad or computer, a concrete representational approach helps learners to make spatial sense of the big ideas of complex number computation through a rich, meaningful, and connected framework. BYOD for guided practice.	Geogebra, iPad, computer
Thu 216	**Getting Students to Argue in Class with Number Sense Activities** ***Speaker: Andrew Stadel***	1:00-2:15 156 A/B (BCEC) Grades: 6-8	This workshop will focus on creating productive mathematical discourse and getting students to constructively argue. Explore activities connected to the Common Core requiring students to construct viable arguments, critique the reasoning of others, and use sense making. Focus on classroom implementation, student support, and free online resources.	online
Thu 226	**Handheld Technology + Hands-On Activities = CCSS Success!** *Speaker: Tom Beatin*	1:00-2:15 205 A (BCEC) Grades: 9-12	Handheld technology coupled with inquiry-based learning helps students to better apply linear, quadratic, and exponential functions to their real-world applications. Participants are provided with classroom-ready, hands-on lessons that synthesize the Statistics, Functions, and Modeling strands of the Common Core State Standards.	Handhelds
Thu 233	**iPad Games Are Fun, but Can They Help Me Differentiate?** *Speakers: Rachael Labrecque & Linda Mumme & Lauri Brady*	2:00-3:00 153 C (BCEC) Grades: PreK-2	Students play math games on their iPads, but then what? How do teachers keep track of what they've learned? Find out how one district uses cognitive research–based iPad games to teach CCSSM strategies. Learn how game-based learning analytics help teachers to track their students' understanding, target intervention, and differentiate instruction.	iPads
Thu 245	**Geometric Transformations and Algebraic Functions: Two Sides of a Coin** *Speakers: Scott Steketee & Daniel Scher*	2:00-3:00 Ballroom West (BCEC) Grades: 6-12	In grades 7–12, CCSSM expects students to understand transformations as functions. This profound link allows students to build a transformation, drag its input (a point), describe the output's behavior, restrict the domain to a number line, and voilà!—end up with a linear function and its Cartesian graph. Leave with student-ready GSP activities.	Sketchpad

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Thu 250	**Tired of Plain Old Tests and Bell Ringers? Introducing Alternative Assessments** *Speaker:* *Niccole Taylor*	2:00-3:00 Douglass (Westin) Grades: 9-12	See innovative ways to assess student learning through hands-on applications, infographics, anonymous polling, collaborative work, and error analysis. Emphasis will be on both formative and summative assessments. Assessments from geometry and precalculus will be provided but can be adapted easily to other math content.	infographics, polling
Thu 260	**Imagine, Innovate, and Inquire with Tools and Technology** *Speakers:* *Angela M. Waltrup & Christopher R. Horne*	2:45-4:00 210 C (BCEC) Grades: 3-5	Experience mathematical learning enhanced with tools and technology. Engage in dynamic activities that support the integration of digital learning experiences. Transformative ideas you can apply in your classroom to assist students in visualizing and understanding math concepts and support students' mathematical reasoning and problem solving.	Technology
Thu 272	**Take Action! Making "Formative Assessment" Formative** *Speaker:* *Eric E. Karnowski*	2:45-4:00 156 C (BCEC) Grades: 6-8	Assessment data does little good, formatively, if you don't act on what that data tells you. In this session, we'll discuss Responsive Actions in formative assessment practices, including how to decide which is appropriate. Bring a laptop or tablet to participate in this interactive workshop—get some practical experience now!	BYOD, laptop, tablet
Thu 274	**Promote Reasoning and Sense Making with Free NCTM Online Resources** *Speaker:* *Ann Kong & Sarah DeLeeuw*	2:45-4:00 253 C (BCEC) Grades: 6-12	Great teachers plus great (and free) technology equals maximized learning. Illuminate your classroom with game-filled lesson plans that supplement technology to engage students and promote the mastery of the mathematical practices.	Online, Illuminations
Thu 292	**Examining the Effectiveness of iPad Apps in Early Childhood Settings** *Speakers:* *Jeffrey C. Shih & Amy Adkins & Charles Allen*	3:30-4:30 104 C (BCEC) Research: PreK-2	We will share the results and discuss the implications of two studies conducted at a HeadStart center.The first study focused on how students interacted with a series of researcher-created mathematics apps.The second study compared the achievement of students using these apps with students that used the best-reviewed early childhood math apps.	

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Thu 302	**Authentic Learning through Computer Coding: Turning Consumers into Creators** *Speaker:* *Dawn DuPriest*	3:30-4:30 157 A (BCEC) Grades: 6-12	If your students like to innovate, model, tinker, and share, they will love coding for authentic learning in math. Take them beyond "The Hour of Code." Learn how programming projects are set up as performance assessments aligned to CCSSM. Explore tools and project ideas, and hear student voices on growth, confidence, and interest in STEM.	coding, programming
Thu 303	**CCSS Shifts in Geometry and Statistics: New Approaches, New Tools** *Speakers:* *Erik Johnson &* *Blake Whitley*	3:30-4:30 255 (BCEC) Grades: 6-12	Two big shifts introduced in the Common Core State Standards are a transformations-based approach to geometry and a comprehensive treatment of statistics. See how to bring these topics to life in your classroom with digital math tools that build student intuition and promote a deep conceptual understanding.	digital tools
Thu 306	Even the Weird Kids Have Parents *Speakers:* *Anthony Griffith &* *Peter Doucette*	3:30-4:30 209 (BCEC) Grades: 9-12	Every continuous function is the derivative of another function. Even the ones that are not listed in a table of basic antiderivatives! We can integrate some derivatives, we can analyze the graphs of some derivatives, and we can use technology to help us define function values for other derivatives.	Technology
Fri 322	Exploring Mathematics Items, Results, and Contextual Information from TIMSS *Speakers:* *Lydia B. Malley &* *Sharlyn M. Ferguson*	8:00-9:00 108 (BCEC) Grades: 3 to 8	The session will be an introduction to TIMSS 2011 math assessment, including (1) an exploration of assessment items at the Dare-to-Compare website, and (2) an investigation of student performance in math and contextual data through a demonstration of the International Data Explorer (IDE). Both of these are publicly available, free web tools (see http://nces.ed.gov/).	Websites, web tools
Fri 332	Modeling the Cycloid: From Geometry to Calculus *Lead Speakers:* *Maria L. Hernandez &* *Taylor Gibson*	8:00-9:00 103 (BCEC) Grade: 9 to 12	Engage your students in the modeling process by exploring data that represents the motion of a cycloid. We will demonstrate how to capture the data from a video and illustrate the geometric underpinnings that verify the model. Data will be shared in various formats along with a GeoGebra file that connects the algebraic and geometric concepts.	Geogebra

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Fri 336	iPads = iReflect. How iPads Changed My Math Methods Class *Speaker: Jeanine L. Haistings*	8:00-9:00 207 (BCEC) Grade: 9 to 12	Learn how tablets helped create an environment of reflection and growth while illustrating the Mathematics Teaching Practices in *Principles to Actions.* Integration of applications, field-based assignments, and assessment ideas will be discussed. Participants will leave with a wealth of ideas and possibilities to improve the self-reflection process for teachers.	iPads, tablet
Fri 355	Creatively Integrate CCSS, Questioning Techniques, Interactive Technologies, and Mathematically-Rich Engaging Problems *Speaker: Tom Reardon*	8:00-9:15 210 C (BCEC) Grades: 9-12	Hands-on experience: three activities that promote active student engagement and are mapped to the mathematical practices and standards. Learn specific instructional strategies and obtain questioning techniques that stimulate deeper conceptual understanding. Discover, explore, investigate, and analyze with appropriate technology (iPad, handheld, software).	Technology, iPad, handheld, software
Fri 361	Yawning Is Contagious? Testing for Significant Differences in Algebra 2 *Speaker: Jared E. Derksen*	8:00-9:15 157 B/C (BCEC) Grades: 9-12	CCSS S-IC.5 asks students to use simulations to evaluate if two treatments are significantly different. Using an episode of *Mythbusters,* we will explore simulations to challenge their conclusion about contagious yawns. Simulations will be performed using cards, calculators, and software. A variety of other contexts for simulations will be provided.	calculators, software, simulations
Fri 368	Stop Answering Questions!—Countering the Google Generation *Speakers: Jonathan M. Ail & Tifiny Howard*	9:30-10:30 Ballroom East (BCEC) Grades: General	Our students come to class preprogrammed to receive instant answers to their math questions. Like a Google search, they expect us to provide a quick and simple answer. We will discuss how to improve student learning and achievement by *not* providing the neat, tidy answers they desire.	google
Fri 369	Lessons Learned about Preschool Children's Use of iPads *Speakers: Amy Adkins & Lina DeVaul & Taro Ito*	9:30-10:30 153 C (BCEC) Grades: PreK-2	The use of iPads in classrooms is becoming more prevalent. In this session, we will share what we have learned in the past two years about the implementation of iPads in a preschool setting. Early childhood mathematics apps, as well as the different ways that teachers integrate iPads to maximize learning, will be shared and discussed.	iPads

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Fri 387	Dynamic Computer Algebra Systems (CAS): Making Calculus Connections *Speakers: Thomas P. Dick & Wade Ellis*	9:30-10:30 108 (BCEC) Grades: 9-12	When dynamically linked to sliders, graphs, tables, and diagrams, computer algebra systems (CAS) can connect multiple representations in calculus in new and powerful ways. We will illustrate the potential with several examples, including an infinite slider, L'Hopital's microscope, Taylor's spreadsheet, and a graphically driven rocket elevator.	Handhelds, CAS
Fri 390	Implementing Emerging Technologies in Freshman-Level Mathematics to Ensure Student Success *Speakers: Jennifer Hegeman & Steven Klassen*	9:30-10:30 255 (BCEC) Grades: Higher Ed	Faculty members teaching freshman-level mathematics at an open-enrollment university describe how instructor-generated video explanations are used to engage students in the learning process. Data collected suggests that the use of video instruction can reduce failure and withdrawal rates in both face-to-face and online courses.	Technology, online
Fri 405	Orchestrating Discourse: Using the iPad to Implement the Five Practices *Speaker: Terry R. Wyberg*	9:45-11:00 109 A/B (BCEC) Grades: 6-8	Learn how to use the iPad to enhance classroom discussions. Hands-on activities will be used to model various technology features that allow all students to have a more active role in describing the strategies they use to solve problems and gives the teacher more visual ways to connect student thinking.	iPad
Fri 408	Statistical Investigations and Analyses with FREE GeoGebra Software *Speaker: Stephen J. Miller*	9:45-11:00 212 (BCEC) Grades: 6-12	Learn how to use GeoGebra for statistical investigations and analyses. Participants will explore concepts, make graphical displays, compute statistics, do probability calculations, find regression lines, and carry out inferential methods (significance tests and confidence intervals). Please have GeoGebra installed in advance (www.geogebra.org).	geogebra
Fri 411	(MAPS)^2: Munchy AP Statistics Mathematical Problem Solving Success for All! *Speaker: Viva M. Hathaway*	9:45-11:00 204 A/B (BCEC) Grades: 9-12	Hands-on classroom anchor activities will motivate your students using cookies, Teddy Grahams, M&Ms, technology, and more. Difficult topics of experimental design, hypothesis testings, Type I/II error, and more will come alive through these activities and make connections for students.	Technology

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Fri 416	Developing Your Classroom beyond the Walls *Speakers:* *Dvora Geller & Scott Bruss*	11-12 253 B (BCEC) Grades: General	Are you inspired to create a space for your classroom beyond the four walls you work in? Come to better understand how to support your students' ability to critique the reasoning of others and form viable arguments through the use of a classroom blog. Learn to make your classroom website a social space for students to share their mathematical experience.	Blog
Fri 422	Practical Strategies for Teaching with Interactive Computer Simulations *Speaker:* *Karina K. R. Hensberry & Amanda McGarry*	11-12 153 C (BCEC) Grades: General	You can use interactive simulations (sims) to engage your students with math content and support their development of the CCSS mathematical practices. Learn practical strategies for integrating sims into your teaching and designing sim-based activities. Videos of teacher practices for effective sim use and lesson plans will be shared.	Computer, simulations, sims
Fri 423	Spreadsheet Math: A Powerful Tool for the Practice of Mathematics *Speakers:* *Art Bardige & Peter Mili*	11-12 160 A (BCEC) Grades: 6-8	Spreadsheets, the main quantitative tool for business and for STEM jobs today, can also be wonderful learning tools for students. We have developed over 100 spreadsheet lessons and case-study experiments for you to use at no cost in your classrooms. Come learn the power of spreadsheets as visual function machines for learning.	Spreadsheets
Fri 430	Authentic Learning with iPads: Creating Visual Representations and Explaining Understandings *Speaker:* *Tim Pelton & Leslee Francis Pelton*	11-12 252 B (BCEC) Grades: 36-8	While iPads/tablets have many potential educational uses, the most powerful of these are creating and communicating. Both teachers and students can use whiteboard apps to create and access manipulatives or templates that support exploration of mathematical ideas. They can then communicate and confirm their understandings by creating video explanations.	iPads, Tablets
Fri 431	Examining Rich Problems and Tasks via Technology *Speaker:* *Eric Milou*	11-12 Grand Ballroom (Westin) Grades: 6-8	This session will examine rich problems and tasks that are generated via pictures and video (rather than words on the papers) and demonstrate how such media can lead to rich discourse, motivation, and deeper mathematical understanding.	Technology, video

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Fri 436	Teaching Transformational Geometry with Technology *Speaker: Daniel R. Ilaria*	11-12 211 (BCEC) Grades: 9-12	One major change in CCCSM is an emphasis on transformations in geometry. In this session, we will examine how dynamic geometry technology can help students develop an understanding of key properties of rigid motions. Using key questions about identifying rigid motions, we will investigate the role of transformations in congruence proofs.	technology, dynamic_geometry
Fri 438	Let's Look at Color: Matrices and Images, What's in Common *Speaker: Susan G. Helser*	11-12 Grand Ballroom (Westin) Grades: 9-12	Explore how color images are represented and stored as pixel values in matrices, an application dependent on matrix mathematics and technology. Matrices are required to handle large data sets. I will focus on cross-disciplinary problem-solving methods and experiential learning opportunities for students.	Technology
Fri 440	The Mandelbrot Set Viewed through Precalculus *Speaker: Daniel S. Anderson*	11-12 103 (BCEC) Grades: 9-12, higher	Have you marveled at the beauty of the Mandelbrot set but never understood how it is created? Have you wondered where complex numbers, binomial expansion, polar form, and DeMoivre's theorem all combine to simply create the Mandelbrot set? We investigate how the fractal is interactively drawn in the processing.org computer language.	fractal, computer, language
Fri 443	How to Flip without Flopping: Implementing a Flipped Classroom *Speaker: Ross Benson*	11:30-12:00 Grand Ballroom E (Westin) General interest	Flipping your classroom can lead to better differentiated instruction and a more efficient use of class time when implemented well. I will lead a discussion about what has worked since I flipped and what has not. The lecture part of this presentation is flipped (http://vimeo.com/83638877) so that we can spend most of the time on discussion and Q&A.	Flipped classroom
Fri 445	Nix the Tricks *Speakers: Tina Cardone & Ashli J. Black*	11:30-12:00 206 A/B (BCEC) General Burst	Being a mathematics student is about critical thinking, justification, and using tools of past experiences to solve new problems. Students who approach every topic as a series of steps to memorize are not learning math. In this session we will explore how to replace some popular tricks with teaching for understanding. (nixthetricks.com)	web

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Fri 461	Transformational Geometry Applied through the Use of SketchUp *Speakers:* *Carl W. Lee &* *Craig Schroeder*	11:30-12:00 107 B/C (BCEC) Grades: 6-8 Burst	Looking for a way to engage your students? In this session learn to leverage the power of free 3-D geometry software (SketchUp) to engineer, design, and create a model you can touch. Transformational geometry comes to life when students are allowed to dream!	Sketchup
Fri 462	Triangle Treachery: Modeling with Mathematics *Speakers:* *Bob Mann &* *Anita L. Reid*	11:30-12:00 156 C (BCEC) 9-12 Burst	What happens to the area and perimeter of a triangle as one vertex is moved on a line? This engaging task will use notecards, technology, functions, modeling, and algebra to analyze this geometric context and to produce some surprising results. The mathematical practices and student learning and reasoning will be emphasized.	Technology
Fri 465	Enhancing Social Presence in Online Math Methods Courses *Speakers:* *Heidi J. Higgins &* *Tracy Y. Hargrove*	11:30-12:00 212 (BCEC) Higher Ed Burst	This session will focus on a study designed to compare methods for increasing social presence in an online math methods course. Strategies for helping participants feel more connected will be shared. We will also explore issues related to environments with low social presence and how these issues impact mathematical teaching and learning.	online
Fri 488	Cryptography Using Linear Functions and Their Inverses *Speakers:* *Kara L. Leaman &* *Ann M. Schlemper*	12:30-1:30 Commonwealth C (Westin) Grades: 9-12	Students can code and decode messages using linear functions and their inverses. This type of cryptography is very exciting and accessible to algebra students with a simple introduction of modular arithmetic. Learn how to do this with your students and see what students from an actual algebra classroom were able to do. TI-Nspire will be used.	TI-Nspire
Fri 497	The Transmedia Approach to Teaching Math *Speakers:* *Jeanne R. Paratore &* *Alejandra Salinas &* *Allison D. Fermetta*	1:00-2:15 104 A/B (BCEC) Grades: PreK-2	Join Boston University and PBS KIDS in exploring transmedia storytelling in educational media, aligned to the Common Core State Standards for Mathematics, to advance children's mathematics learning. Experience how a single story line can weave through multiple platforms (video, online, and hands-on activities) to engage students and reinforce learning.	Transmedia

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Fri 506	Connecting Proportional Reasoning and Algebraic Thinking *Speaker: Gloria Beswick*	1:00-2:15 257 A/B (BCEC) Grades: 6-8	Understanding multiplicative relationships and reasoning proportionally is essential to students' success in algebra. Participants will engage in hands-on activities designed to develop proportional reasoning at a concrete level and make explicit connections to algebraic thinking. TI-Nspire technology will be used to explore these connections.	TI-Nspire technology
Fri 509	**Creating and Sharing Mathematics through Puzzle Apps: In School and Out** *Speakers: Mary K. Fries & Jane M. Kang & E. Paul Goldenberg*	1:00-2:15 253 A (BCEC) Grades: 6-8	Creating and solving mathematics puzzles encourages creativity and perseverance. See how several NSF-funded puzzle apps support numerical, logical, and algebraic reasoning. Learn how to use these research-based materials to engage all students in mathematical reasoning, in and outside of school. Please bring an Internet-enabled device.	BYOD, Internet
Fri 511	Thinking Like a Synthesizer: Applying Algebraic Transformations to Musical Melodies *Speakers: Mike J. Reiners & Bob Horton*	1:00-2:15 Grand Ballroom (Westin) Grades: 9-12	Every song's melody can be expressed as a series of integers, each of which represents the number of musical half-steps above or below the first note in the song. Using various basic math and music technologies, we will create discrete graphs that we can transform horizontally and vertically—just like composers and synthesizers do!	music technologies
Fri 512	Hooked on Conics Worked for Me *Speakers: Lauren Jeneva Moseley & Jeremy Robert Newton & Jonathan Matthew Clark*	1:00-2:15 107B/C (BCEC) Grades: 9-12	Hands-on teaching approaches make conics come to life. Using wax paper, Wikki Stix, cheese, thumbtacks, flashlights, and string, all students can investigate conics. This promotes conceptual understanding and connections between two and three dimensions. Technology and trigonometry will help us verify that we can generate the same curve in 2-D and 3-D.	Technology
Fri 514	Beyond Bells and Whistles: Evaluating and Designing Dynamic Geometry Tasks *Speakers: Charity Cayton & Milan Sherman & Kayla Chandler*	1:00-2:15 205 A (BCEC) Grades: 9-12	Ever used dynamic geometry software to engage your students, and come away feeling like it added little to the lesson? Wonder how to use technology to deepen students' understanding? Come to this presentation and learn to design DGS tasks that will get your students thinking. Bring your laptop with either GeoGebra or Geometer's Sketchpad.	Technology, software, Geogebra, Sketchpad

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Fri 515	Reasoning Abstractly and Quantitatively with Conic Sections *Speaker: Bethany Noblitt*	1:00-2:15 253 A (BCEC) Grades: 9-12	To “reason abstractly and quantitatively” students must decontextualize and contextualize in a mathematical situation. Aided by the TI-Nspire, we will explore how this standard for mathematical practice might play out as students explore definitions of and formulas for different conic sections in Euclidean, Taxi Cab, and Chinese Checkers geometries.	Ti-Nspire
Fri 520	Future of Learning: The National Science Foundation's Focus on Mathematics *Speaker: Joan Ferrini-Mundy & Karen D. King*	2:00-3:00 Commonwealth (Westin) Grades: All	The National Science Foundation is "where discoveries begin." Hear about how NSF investments lead to discoveries to improve mathematics learning and teaching. See the latest NSF-supported new technologies, digital games, online learning, citizen science, big data, scaling-up, research, and other resources to help students learn mathematics.	Technology, digital games, online
Fri 545	Locating Outliers and Influential Points Using Regression Analysis and Technology *Speaker: James Graziose*	2:00-3:00 154 (BCEC) (BCEC) Grades: 9-12	This session will focus on the common methods which are used to detect outliers and influential points in data sets. Paticipants will use examples along with technology to determine the equation of the regression line, and then plot the regression line with and without the influential point(s) being included in the data set.	Technology
Fri 565	Fractions: Everybody Knows Your Name? *Speaker: Christine Ruda*	2:45-4:00 104 A/B (BCEC) Grades: 3-8	Does every student in a classroom really know and understand fractions? Participants will explore practice-rich tasks that integrate handheld technology, digital content, and manipulatives to build fraction concepts. Specific examples of the Standards for Mathematical Practice in action will show effective teaching of fractions for *all* learners!	Handheld technology
Fri 567	Common Core Based Investigations in Geometry *Speaker: Fred Decovsky*	2:45-4:00 253 C (BCEC) Grades: 6-12	Participants will explore hands-on activities designed to investigate CCSSM and the mathematical practices related to geometry. See how these explorations and the use of handheld technology make the mathematical practices come alive in the classroom and engage your students in tasks rich in problem solving.	Handheld technology

Session	Title/Speaker	Time	Description	Key word(s)
Fri 570	Financial Literacy for the High School Student *Speaker: Lauren Ward*	2:45-4:00 156 C (BCEC) Grades: 9-12	During this hands-on workshop, the presenter will present appropriate activities for teachers to implement in their algebra 1, geometry, algebra 2, or a personal finance class for grades 9–12. Content will be real-life application of Common Core standards. Activities will include group projects, software programs, and individualized life skills project.	software
Fri 572	Prove It! . . . With Rigid Motion Transformations *Speaker: John Ashurst*	2:45-4:00 258 C (BCEC) Grades: 9-12	Participants will be presented with pairs of geometric figures. Through exploration, we will devise strategies for using one or more rigid motion transformations to prove, or disprove, congruency. Along the way, we will analyze the merits of paper folding, compass-straight edge, and handheld technology as we perform the various constructions.	Handheld technology
Fri 575	10 To-Dos for Converting *Principles to Actions* into Tangible Improvements *Speaker: Steven Leinwand*	3:30-4:30 Ballroom East (BCEC) Grades: All	This fast-paced, example-laden presentation will look at ten specific actions that teachers and teacher leaders can take to translate the vision and recommendations of NCTM's *Principles to Actions* into focused and impactful initiatives. We'll focus on teaching and learning, tools and technology, assessment and professionalism.	Tools and Technology
Fri 579	Effective Strategies for Planning and Teaching CCSS-Aligned Lessons *Speakers: Barbara Beske & Beth Cocuzza*	3:30-4:30 205 B (BCEC) Grades: All	Learn about specific teacher and student behaviors in CCSS-aligned lessons while examining NCTM's *Principles to Actions* and the Instructional Practice Guide. We'll address innovative teaching strategies that engage all learners and share free digital resources that support effective planning, coaching, and self-reflection.	digital resources
Fri 594	Statistics in the Middle Grades Using the TI-Nspire iPad App *Speakers: Dona McSpadden Kara L. Leaman & Ann M. Schlemper*	3:30-4:30 255 (BCEC) Grades: 6-8	CCSS has placed the majority of the statistical concepts in grades 6–8. The TI-Nspire App for the iPad is an ideal environment to help students summarize and analyze data using measures of central tendency and different graphical methods such as histograms, box plots, bar and pie charts, and more.	TI-Nspire App, iPad

Session	Title/Speaker	Time	Description	Key word(s)
Fri 600	QR Code Scavenger Hunt *Speaker:* *Brian McBain & Jennifer McBain & Heather Curl*	3:30-4:30 Commonwealth C (Westin) Grades: 9-12	Who doesn't love a scavenger hunt? We hide the QR Codes and have our students search for them. Each QR Code leads to a website with a question. Get it right and you get a clue to open our prize box. Come join us for some fun and actually take part in the scavenger hunt! Make sure you bring a pencil and paper and a device with a QR code reader.	BYOD, QR Reader
Fri 601	Using Geometer's Sketchpad to Dissect the Geometry of Washington, D.C. *Speaker:* *Theresa J. Simmons*	3:30-4:30 157 A (BCEC) Grades: 9-12	his session will explore the mathematical beauty of the streets of our Nation's Capital. Participants will learn how to engage their students with the mathematics that shows up right along the streets and historical landmarks of the city and discover how the use of technology can enhance the application of math concepts.	Sketchpad, technology
Fri 603	LinReg Exposed! *Speaker:* *John Hanna*	3:30-4:30 203 (BCEC) Grades: 9-12	Here's an engaging, enriching explanation of the algebra behind the linear regression feature of many graphing calculators. With the help of CAS (computer algebra system) it's easy to grasp this elegant algorithm and the basic algebra that makes it effective and understandable.	graphing calculators, CAS
Sat 606	**Techers as Designers:Mindset and Multidimensional Mathematics in Classrooms** *Speaker:* *Jo Boaler*	8:00-9:00 Ballroom East (BCEC) Grade: All	I will consider what it means to teach the multidimensional mathematics needed in our high-tech world at the same time as instilling a growth mindset in all of our students. These changes have the potential to erase underachievement and inequality in classrooms, as well as giving teachers a more creative and fulfilling role in their work as educators.	high_tech
Sat 611	Hour of Code: Inspiring Students to Learn Math through Technology *Speakers:* *Karl Henry Romain & Elizabeth Clifford*	8:00-9:00 103 (BCEC) Grade: PreK-5	Come see how an urban district is using computer programming and technology to help African American and Latino students gain fluency in number, while embracing the habits of mind exemplified in the practice standards of the Common Core.	programming, technology

Session	Title/Speaker	Time	Description	Key word(s)
Sat 623	Transformational Geometry with Technology: Implications of Common Core *Speakers: Janet B. Andreasen & Erhan Selcuk Haciomeroglu &Edward M. Knote*	8:00-9:00 160 A (BCEC) Grades: 6-12	Transformations have increased emphasis in the Common Core. No longer are transformations relegated to middle school and touched on briefly in high school. This session will explore the connections to transformations throughout middle and high school and demonstrate methods for using technology to support student learning of transformations.	Technology
Sat 628	Supporting Teachers' Use of Discourse, Dynamic Geometry, and Collaboration Virtually *Speakers: Muteb M. Alqahtani & Arthur B. Powell*	8:00-9:00 160 (BCEC) Grade: 9 to 12	We describe a program where secondary teachers develop further their geometrical and dynamic-geometry knowledge for teaching. We explore how teachers further their knowledge through discursive interactions using specifically designed, researched dynamic-geometry tasks in an online, collaborative environment—Virtual Math Teams with GeoGebra (VMTwG)	dynamic_geometry, online_collaboration, Geogebra, virtual
Sat 641	Using Technology to Enhance ELLs' Conceptual Understanding of Proportional Reasoning *Speakers: Bob McDonald & Mike Lutz & José Franco*	8:00-9:15 252 A (BCEC) Grades: 6-8	TODOS Mathematics for ALL collaborated with Texas Instruments to adapt lessons to include English language development strategies and technology. These lessons provide access to high cognitive demand tasks in proportional reasoning to ELLs in middle school. This session will highlight one of six lessons integrating language, math, and technology.	Technology, handhelds
Sat 649	How to Connect Geometric Properties of Conics and Their Equations *Speaker: Arthur T. Mabbott*	8:00-9:15 102 A/B (BCEC) Grades: 9-12	Particpants will fold models of parabolas, ellipses, and hyperbolas and then mimic the same actions using the Nspire app on the iPad. We will make the connection between geometry and algebra—between constructions and graphing—incorporating the power of patty paper, the iPad and the Nspire app.	TI_Nspire app, iPad
Sat 655	Five Essential Instructional Shifts for Transforming K–12 Common Core Classrooms *Speaker: Juli K. Dixon*	9:30-10:30 Ballroom West (BCEC) Grades: All	Explore five essential K–12 instructional shifts that emphasize the mathematical practices and the content they support. Engage with elementary, middle, and high school tasks and how to support them during instruction. Enhance your understanding of the shifts through the use of authentic video in elementary, middle, and high school classrooms.	Authentic_video

Session	Title/Speaker	Time	Description	Key word(s)
Sat 656	Teaching with Technology: Tips for Success *Speaker:* *Nancy J. Sattler*	9:45-11:00 210 B (BCEC) Grades: All	The art of teaching has changed drastically over the past twenty years with use of the Internet and new technology. Visualization of mathematical ideas that may occur online can far surpass what may be created on the blackboard of a traditional class. Come learn some tips for success by a veteran online instructor.	Technology, online
Sat 657	**The Future of Homework, Knowing Student Results before Class Begins** *Speakers:* *Cristina Heffernan & Barbara Delaney*	9:30-10:30 254 A/B (BCEC) Grades: All	What would you do if you had access to homework results before students arrive to class? How would the behavior of your students change if they received immediate feedback as they worked on their homework? Researchers in the Learning Sciences and Technology program at WPI know and they can show you how to make this a reality in your classroom.	Technology
Sat 662	**Inside a Dynamic Math 2.0 Classroom** *Speaker:* *Ihor Charischak*	9:30-10:30 160 A (BCEC) Grades: 6-8	The Internet, cloud computing, and portable devices are making inroads into the classroom. What does a Web 2.0–based classroom involving dynamic math software that produces active learning look like? Examples of collaborative, Math 2.0 activities will be shared.	Internet, cloud computing, portable devices, Web_2.0, math_2.0
Sat 664	**Ratio Tables and Tape Diagrams #notjustforRP** *Speakers:* *Melissa Waggoner & Lindsay Kelley*	9:30-10:30 104 C (BCEC) Grades: 6-8	Students learn how to use ratio tables and tape diagrams in the Ratios and Proportional Relationships domain of CCSSM. Then what? In this interactive session, we will explore how these tools can be used to build procedural fluency from conceptual understanding in other content domains, including the Number System and Expressions and Equations.	Hashtag, #notjustforRP
Sat 666	**The Algebra Artist: Drawing with Desmos** *Speaker:* *Darin E. Beigie*	9:30-10:30 159 (BCEC) Grades: 9-12	Have your students become Algebra Artists by using free Desmos online graphing software to create drawings from algebraic equations and inequalities. Inspire your students to think deeply and holistically about graphing as they create beautiful images. Practice and pedagogy are discussed with plenty of student creations as illustration.	Desmos

Session	Title/Speaker	Time	Description	Key word(s)
Sat 668	**Conceptualizing the Trigonometric Functions Using Technology** *Speaker: Joshua Hertel*	9:30-10:30 252 B (BCEC) Grades: 9-12	In this session, I will present activities that can be used to engage students in reasoning about the trigonometric functions through a interactive geometry environment. This approach can help students build conceptual understanding of the functions and their properties, thereby reducing meaningless memorization and mnemonics. Laptops welcome!	Dynamic_geometry, technology BYOD
Sat 669	**Webinars as a Pathway to Understanding CCSSM** *Speaker: Sean D. Nank*	9:30-10:30 15408 (BCEC) Grades: 9-12	CCSSM provides an opportunity for educators in multiple states to enact dialogue over common standards. University led webinars provide a pathway to discover how teachers can best implement CCSSM via a shift in curricula, pedagogy, and assessments. We will complete an activity centered around MP.4: "Model with mathematics."	Webinars
Sat 686	Digital Learning to Address a Concept-Driven, Diverse Learning Environment *Speaker: Rudy V. Neufeld*	9:45-11:00 157 B/C (BCEC) Grades: 6-8	We will model a personalized learning environment by blending traditional and digital methods in conceptual development of fractions to algebra. Our mind-set will be on "understanding why" rather than "remembering how." Participants receive access to software and three-part lessons to support rich discussion, seamless integration, and differentiation.	Digital
Sat 687	STREAMing with Common Controversial Core *Speaker: Judith A. Deeley*	9:45-11:00 204 A/B (BCEC) Grades: 6-8	Participants will experience activities related to middle grades mathematics integrated with art, engineering, and technology in an effort to demonstrate that the mathematical practices and habits of mind outlined with the Common Core truly benefit learners in a myriad of ways. The overarching theme will center upon understanding similarity.	Technology
Sat 697	Learning Meaningful Mathematics with iPads: Beyond Skill and Practice Apps *Speaker: Amanda Thomas*	11-12 252 B (BCEC) Grades: All	iPads are increasingly common in K–12 classrooms and can be powerful tools for learning mathematics. Join us as we look beyond skill and practice apps and explore how iPads can support rich mathematics experiences. Learn about mathematics, communication, and assessment apps and share how you are using iPads to improve students' quality of learning.	iPads

Session	Title/Speaker	Time	Description	Key word(s)
Sat 705	Using Physical/Virtual Manipulatives to Teach Multiplication, Division, and Fractions *Speaker:* *Dan Sinclair &* *Joseph Sencibaugh*	11-12 106 (BCEC) Grades: 3-5	Physical and virtual manipulatives significantly affect the development of students' problem-solving skills and conceptual understanding. Participants attending this session will learn how to use physical and virtual manipulatives for affirming a relational understanding of math concepts by making connections between visual depictions and symbolic models.	Virtual
Sat 707	DIY Session: Secrets behind Building a Better Math Lesson *Speaker:* *John Sessler*	11-12 153 C (BCEC) Grades: 6-8	Is your math class looking a little tired around the edges? Join PBS for a hands-on "DIY" session and find out how you can construct the *ultimate* math experience using digital media and technology! You'll walk away with access to thousands of free resources and cool tech tools you can use to engage students inside and outside of the classroom.	Digital media, technology
Sat 714	Modeling Noise-Cancelling Headphones with Trigonometric Functions *Speakers:* *Blake Whitley &* *Jennifer Nickell &* *Ashley Whitehead*	11-12 257 A (BCEC) Grades: 9-12	Ever wondered how noise-cancelling headphones block out ambient noise in a room? This task was designed for students to reason about transformations and compositions of trig functions using GeoGebra to model sound waves. Videos and artifacts of student work and reasoning will be provided. Bring a laptop with GeoGebra or GSP to engage in the task!	Headphones, Geogebra, Sketchpad, BYOD