Shelbi Cole serves as the deputy director of content for the Smarter Balanced Assessment Consortium. Cole is responsible for ensuring that the assessments measure the depth and breadth of the Common Core State Standards. She oversees the processes used for item writing, item quality, item alignment, item sensitivity, and bias and data reviews, as well as the production of formative assessment and professional development materials for mathematics and English language arts. Cole served as the director of mathematics for Smarter Balanced prior to stepping into the role as deputy director of content.

Before joining Smarter Balanced, Cole served as a mathematics education consultant for the Connecticut State Department of Education, overseeing the development of the state’s high school mathematics assessment and contributing to the state’s transition plan for the Common Core State Standards. Prior to that role, she was a high school mathematics teacher. Cole received her master’s of secondary education and Ph.D. in educational psychology with an emphasis on gifted and talented education from the University of Connecticut, Storrs.

A Smarter Balanced System for Supporting Mathematics Teaching & Learning

Mathematics standards geared toward college- and career-readiness are characterized by their focus, coherence, and rigor. This presentation will illustrate how the Smarter Balanced assessment system is designed to support these three critical shifts.

Simplifying Strategies: Look for and Make Use of Structure (Grades K-2)

The structures of 5 + n and ten relate to the composition and decomposition of numbers. This understanding enables students to create equivalent but easier problems to solve, and extends to larger numbers. It also supports fluency with the addition and subtraction algorithms. We will look specifically at number bonds and strategies such as make a ten, take from ten, and compensation.

Lisa Watts Lawton, Gardner Street Elementary School; Great Minds
Exploring the Areas of Polygons on the Geoboard

Using a geoboard, participants will explore interesting ways to decompose polygons into triangles and other shapes in order to determine the area. Hands-on and challenging. Appropriate for 6th grade geometry (6.G.1), including English Language Learners, visual learners, and Gifted.

*Stephanie Penniman,* Shiloh University; UCLA Curtis Center

Number Sense Routines that Support the SPM’s

How do you help your students develop a rich number sense while integrating the Standards for Mathematical Practice...Routines! This session will focus on developing number sense routines, such as number talks, that are based on Cognitively Guided Instruction research.

*Helen Chan,* Da Vinci Innovation Academy

*Melissa Canham,* Downey Unified School District

MIDDLE SCHOOL TALKS

Ratio and Proportion Progression for the SBAC Digital Library Project

SBAC, in collaboration with Illustrative Mathematics, has sponsored a project producing professional development and classroom materials related to ratio and proportion. We will look at and work on some tasks, whose goal is to help better understand the ratio and proportion Common Core standards: this includes a look at important ideas from grades 4 and 5 which lead into proportional thinking and material from the eighth grade standards which builds upon proportional thinking.

*Michael Nakamaye,* Illustrative Mathematics; University of New Mexico

Learning Slope Via Rate, Not Rote

Building a foundation for slope begins with a concrete understanding of rate, ratios, proportional relationships and similarity. By introducing slope as a rate, particularly a unit rate, the real meaning and relevance of slope can emerge.

*Stefanie Hassan,* Great Minds
Conic Sections  
In this session, we examine a unit I developed for conic sections, based around an introductory parabola lesson demonstrated to my mathematics department during an on-site Curtis Center professional development. The unit includes lessons for teaching students about circles, parabolas and an extension to ellipses and hyperbolas using focus-directrix graphing paper.

Jasmine Durley, Artesia High School

The Game of Hex and the Brouwer Fixed-Point Theorem
In this session, we will introduce some basics of combinatorial game theory, including how basic graph theory can be used to determine optimal strategies. Then, as an example, we will preform a complete analysis of the game of Hex and show how using our elementary methods to find the optimal strategy is equivalent to a famous geometric problem.

Dr. Marcy Robertson, University of California, Los Angeles

Mathematical Modeling in Geometry  
The Common Core State Standards for Mathematics place an emphasis on mathematical modeling. In this session, we will work through engaging and hands-on geometry lessons from the College Preparatory Mathematics curriculum (CPM) that reflect everyday life, work, and decision-making. I have found these lessons and their focus on inquiry-based learning to be highly successful in my classroom. I hope you will join me so that we can explore them together.

Caline Khavarani Smith, Da Vinci Science High School

Solutions, Extraneous Solutions, and the Logic of Solving Equations
By exploring classroom tasks, we will investigate standards from the Algebra domain “Reasoning with Equations and Inequalities.” We will discuss the logic of solving equations and systems of equations and we will uncover sources of extraneous solutions.

Josh Chesler, California State University, Long Beach
Singularity: From Cones to Black Holes  
We explore the notion of singularity in geometry. A singularity is a point on a geometric object where tangent directions do not behave as they should. Basic geometric examples include double points on curves and vertices of cones; the same structures describe for example black holes. 
Christian Haesemeyer, University of California, Los Angeles

Getting Students to Reason Abstractly and Quantitatively  
In this session, teachers will participate in 3 lessons focusing on collecting data, modeling data, and interpreting the results. Come see how to engage your students and get them thinking about the meaning of variables, coefficients and constants as they collect their own data and make sense of mathematics they see! Designed for middle and high school levels, the lessons focus on rates of change with linear and non-linear data sets. The lessons do not require a specific technology, but participants will learn to use various graphing technologies to model data with their students. 
Elisabeth McVerry, Mission Viejo High School

The Algebra Artist: Drawing with Desmos (Grades 7-12)  
Have your students become Algebra Artists as they create drawings from algebraic equations and inequalities using a free online graphing tool called Desmos. 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. 
Darin Beigie, Harvard-Westlake School

Success with Integrated Mathematics: A Panel Discussion  
Thinking about going integrated? Just started and looking for ideas and answers? Looking for the best resources? This panel will provide practical examples and suggestions from their experience teaching integrated mathematics and building support for an integrated pathway. Bring your questions. Expect great insights. (Grades 8-11)  
Peggy Sellers, Oceanside Unified School District  
Erika Amaya, Archer School for Girls  
Monique Evans and Amy Johnson, Environmental Charter High School  
Bruce Grip, Consultant (facilitator)
Mathematics for Teaching: Suggestions for the Mathematical Preparation and Professional Development of Secondary Teachers

Based on work with secondary teachers, on my own high school teaching experience, and on the CBMS report “The Mathematical Preparation of Teachers,” I’ll give some examples from undergraduate mathematics that have useful applications to middle and high school teaching. Part of the talk will describe my joint work with Joseph Rotman (University of Illinois at Urbana-Champaign) to develop an abstract algebra course that addresses some needs of prospective high school teachers.

Al Cuoco, Education Development Center

Supporting Pre-Service Teachers Engage Students in Mathematical Discourse

This session will focus on how a classroom observational framework was used with readings, video analyses, instructional rounds and other learning activities in a secondary mathematics methods course to support beginning teachers engage their students in mathematical discourse. Participants will engage in math discussions and identify teaching strategies that leverage student talk. The significance of this work is helping beginning teachers bridge theory and practice through intentional practices in a teacher education program.

Jaime Park, Ph.D, UCLA GSEIS

Writing? But this is math class!

Writing in the math classroom can be a powerful tool to support instruction. Writing supports students in thinking more deeply about mathematics. It can help them organize their thinking, make sense of math, become active participants in their learning, and much more. Writing can give teachers insights into their students’ understandings and misconceptions. This session will support your implementation of the Common Core math practices with easy-to-use strategies for incorporating writing activities into your classroom. Free MDTP Written Response Materials CD will be provided.

Mary Siroyd, Mathematics Diagnostic Testing Project; UCLA Curtis Center

LUNCH BANQUET – 11:45-1:00 – UCLA FACULTY CENTER
Al Cuoco is Distinguished Scholar at Education Development Center in Boston. He is lead author for The CME Project, a four-year high school curriculum, and Developing Mathematical Practice, a professional development course for secondary teachers. He also co-directs Focus on Mathematics, a partnership that has established a community of mathematical practice among mathematicians, teachers, and mathematics educators in the Boston area. The partnership evolved from his 25-year collaboration with Glenn Stevens on Boston University’s PROMYS for Teachers, a professional development program for teachers based on an immersion experience in mathematics. He and Eden Badertscher have begun a new partnership that involves EDC, Pittsburgh Public Schools, Carnegie Mellon, the University of Pittsburgh, and Duquesne University, aimed at opening up more opportunities in mathematics for all students. And Al is working on a team that includes Brian Harvey, June Mark, and Paul Goldenberg to create a high school version of Berkeley’s celebrated Beauty and Joy of Computing course.

Al taught high school mathematics to a wide range of students in the Woburn, Massachusetts public schools from 1969 until 1993. A student of Ralph Greenberg, he holds a Ph.D. from Brandeis, with a thesis and research in Iwasawa theory. Recent books include Mathematical Connections: a Companion for Teachers and Others and Learning Modern Algebra (with Joseph Rotman), both published by MAA. But his favorite publication is a 1991 paper in the American Mathematical Monthly, described by his wife as an attempt to “explain a number system that no one understands with a picture that no one can see.”

From Grade 5 to Precalculus: The Arc of an Investigation

We’ll trace a trajectory for an investigation that was introduced in a grade-5 class and that led to a sequence culminating in a grade-12 treatment of generating polynomials. And we’ll see how the fifth graders’ work previewed the mathematics used in a precalculus course.
**PM BREAKOUT SESSION SPEAKERS – 2:30-3:45**

**ELEMENTARY TALKS**

**Units of Study**  **RESEARCH & RECOMMENDATIONS**  **MS 3974**  **45**

Common Core State Standards dramatically raise the bar for students. Teachers are under pressure to “make changes” and to “teach harder”. How do we design instruction that promotes deep understanding rather than surface coverage? How do we teach towards goals rather than isolated novel activities? The presenter will discuss using “units of study” as a vehicle for the essential changes required to successfully implement CCSS-M.

**Sunny Chin-Look**, **Alhambra Unified School District; Member of Mathematics Curriculum**

**Even Mathematicians Love a Good Story**  **PEDAGOGY**  **MS 6620A**  **35**

Once upon a time, thematic teaching was all the rage. Then, times changed, standards changed, and some of us tucked those trade books away in our memory banks. However, publishers never stopped publishing, and children never stopped appreciating a mind stimulating read aloud. In this workshop we will visit some of these new books, along with some old favorites, and examine how they can enhance our teaching of the Common Core Math Standards. Participants will learn about the three types of math read aloud books and examine some guidelines for making math ideas come alive through the narratives. The workshop is appropriate for teachers in kindergarten through grade 3 who love to read to their students.

**Lynne Redman Co**, **UCLA Curtis Center**

**MIDDLE SCHOOL TALKS**

**Why Performance Tasks?: Linear Function, System of Equations, and System of Linear Inequalities (Grade 7-8 and Algebra I) Through Daily Use of Starbucks vs. Keurig**  **PEDAGOGY**  **MS 3915D**  **24**

In this session, we examine a linear functions, system of linear equations, and system of linear inequalities unit that begins in the real world. The unit begins by asking students to determine whether a Starbucks or Keurig habit is better for their finances. In so doing, the unit provides a bridging context in which to build student conceptual understanding, and provides a motivation for learning the mathematics at hand. Developing a performance task and investigative activities will be discussed. SBAC performance models and resources will be shared.

**Nicole Kim**, **William S. Hart District Common Core Content Leader; UCLA Curtis Center**
Getting from Solving a Proportion to a Proportional Relationship

The Common Core State Standards have a focus on "proportional relationships" in grade 8. But nowhere do the standards even mention "solving a proportion". This session will explore the connection.

Dick Stanley, University of California, Berkeley

Some Problems for CCSM Statistics and Probability

Problems on comparison of data sets and analysis of linear data will be given based on MDTP’s discussion of operational test items. Conditional probabilities will be computed from categorical data, and compound probabilities will be computed from uniform models. Conditional and compound probabilities will be interpreted through geometric probability and sequential events.

John Sarli, California State University, San Bernardino; Mathematics Diagnostic Testing Project
Wally Etterbeek, California State University, Sacramento

Smoothie Sales: A Lesson on Rational Functions

In this session, we will present a lesson motivating students to create a rational function (CCSS.MATH.CONTENT.HSA.CED.A.1). The lesson has students create a fictional business of selling smoothies, and asks them to relate the number of smoothies they sell to the amount of profit they take in. The lesson is designed to help students make connections between rational functions and the corresponding real-world context.

Sophie Chen, Alliance Margaret M. Bloomfield High School

Stats in Algebra, Oh My!

This session will investigate Least-Squares Regression modeling strategies in Intro Statistics and Algebra 1 courses. We will investigate why the Pythagorean expectation of winning percentage is a good model to predict a baseball team’s winning percentage while deepening our conceptual understanding of what is meant by least-squares.

Kyle Atkin, Kern High School District

How Far Away is That Ship?

It is easy to see that the earth is round on the ocean. In this session, we will discuss computing the distance to far off tall objects, taking into account the curvature of the earth.

Jim Ralston, University of California, Los Angeles
Real World Application Problems  

Most real-world textbook problems are not real. They are often contrived, irrelevant, and ridiculous. How can we make textbook “application” problems richer and more real? Where can we find great application problems to substitute for pathetic problems? How can we make decent problems better? Let’s laugh, think and create. (Grades 8-12)

Bruce Grip, Consultant

Developing an Understanding of Standard Deviation for Algebra Students  

In this session, we will explore one method to introduce statistics to Algebra I or II students. We will simulate a sample lesson in which students explore the necessity for a measure of standard deviation (CCSS.Math.Content.HSS.ID.A.2) based on test data that they collect.

Rachel Hirst, Huntington Park High School

Preparing a District’s Math Faculty for the Common Core: A Panel Discussion  

In this workshop, district leaders, mathematics coaches, and teachers will explore essential elements to successfully prepare teachers for the Common Core by considering the following four aspects: professional development, curriculum, instruction, and assessment. We will also share our journey in the transition as a district and present a model developed together with the UCLA Curtis Center.

Kelly Henderson, Centinela Valley Union High School District

Nahee Kwun, Centinela Valley Union High School District

Grace Yang, Centinela Valley Union High School District

Designing a Coherent Math Curriculum Using the Curtis Center Common Core Standards Mapper  

How can teachers and districts organize the new standards into a coherent curriculum? The UCLA Curtis Center has created a free online resource that maps all K-12 math standards and provides downloadable classroom activities and resources. Using this tool as a guide, we will discuss the characteristics that make a successful curriculum plan.

Michelle Sidwell, UCLA Curtis Center
Resources to Practice the Common Core Standards for Mathematical Practice

These online public-domain resources support teachers to be proficient in the Standards for Mathematical Practice (SMP) through engaging discussions, videos, and problems. Included are grade span examples and strategies for English learners. Participants will engage in the SMP and focus on supporting students to develop the habits of mind necessary to become proficient as mathematical thinkers. All materials are available for leaders to use with other teachers in their schools and districts.

Susie W. Hakansson, Ph.D., TODOS: Mathematics for ALL

Access, Equity, and the Standards for Mathematical Practice

Even though the 2000 NCTM Principles and Standards for School Mathematics emphasized the Equity Principle, 15 years later, we still see performance gaps between affluent students and low-income students of color in mathematics. The Common Core Standards for Mathematical Practice (SMP) offer an opportunity to eliminate these gaps if implemented well. This panel will bring together teachers, students, and support providers to discuss their role in using the SMP to promote access and equity.

Kyndall Brown, California Mathematics Project
Sunanda Kushon, UCLA Teacher Education Program
Zeba Savage, UCLA Mathematics Project
Frank Divinagracia, Da Vinci Science High School
Katie Kondo, Da Vinci Science High School
Caline Khavarani Smith, Da Vinci Science High School

Mathematics Diagnostic Testing Project and the Common Core

In this session, we will discuss how the free materials and services offered by MDTP can be used to support your CCSS-M aligned classroom. We will discuss new CCSS-M aligned testing materials, the schedule for future releases and how your school can become a field test site. We will look at a specific MDTP diagnostic test and a sample test results report that teachers receive from MDTP. We will discuss how to use the results report to guide teacher’s instructional decision making and support departmental collaboration. Attendees will be provided materials for middle and high school math courses, including the CAHSEE prep test, and a CD of written response items.

Mary Sirody, Mathematics Diagnostic Testing Project; UCLA Curtis Center
Kelli Wasserman, Mathematical Ed Consultant; Mathematics Diagnostic Testing Project Written Response Committee