



**Confluence Building, Conference Room 105-109**

**8 – 9 AM, Registration - Coffee & Breakfast**

**Thank you to Pearson for their generous sponsorship of our breakfast**

**Welcome: Dr Everette Freeman, CCD President**

**Confluence Building, Conference Room 105-109**

**9:10 – 10:20 AM, Keynote Address** *What (quilting) circles can be squared?*

**Dr. Elizabeth Malmskog, Department of Mathematics, Colorado College**

*Dr Elizabeth Malmskog holds a PhD in mathematics from Colorado State University in arithmetic geometry. Beth has brought her intellect and charm far and wide since then. She has taught everywhere from Villanova and Wesleyan Universities to Grateford Prison. She does research on everything from lofty topics from arithmetic geometry to combinatorial problems accessible to undergraduates (featured here in today’s talk on quilting circles). She writes everything from number theory algorithms in SAGE to the PhD+Epsilon blog for the AMS. It is hard to find a colleague more dedicated to both mathematical excellence and humanity/community than Beth. We are lucky to welcome her today as our keynote speaker at ColoMATYC 2019!*

A few years ago, I received an email from a friend’s mom with a question about a problem she was having with her quilting circle: is it possible to find a way to pass quilts among five people so that each person works on each quilt, and no person passes to the same person twice?  The pursuit of an answer led me to row complete Latin squares.  Latin squares are combinatorial objects with a thousand year history and modern applications in experimental design, error correcting codes, and entertainment, in the form of Sudoku. The journey doesn’t stop there, though; this talk will describe how one simple problem connects quilting, taste testing, combinatorics, group theory, graph theory, number theory, music, Tom and Jerry, and the power/limits of modern computing.  We will begin with a quilt and conclude with a number of related open problems.

**10:20 – 10:30, AMATYC Update**

-----------------------------------------Puzzle of the Day #1--------------------------------------

Eight people are at the top of a sixty floor building. An elevator has capacity for only four people and can traverse the whole building in 2 minutes. The staircase has capacity for an unlimited number of people, but it takes 4 minutes to traverse the whole building via stairs. Come up with a way to evacuate the building in less than three minutes.

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**10:40 – 11:30 AM, Session 1**

## **Confluence Building, Room 217** CoADE Panel, The Future of Developmental Education in Colorado

Art Terrazas, President of Colorado Association for Developmental Education

Connect with the Colorado Association for Developmental Education (CoADE)!! CoADE is ready to engage in candid conversations with mathematics faculty on the future of developmental math courses. How can CoADE assist in promoting best practices in developmental education? Share you concerns, ideas, and thoughts. We are ready to listen, learn, and support.

**Confluence Building, Room 219** Implementing Mathematics Pathways: Co-Requisite Course Project

Ann Cushman & Ivana Seligova, Pikes Peak Community College

What is your definition of a co-requisite course? One that is contextualized, promotes Math Pathways, and is a custom prep course to college-level course?   These are key features of co-requisite courses being collaboratively developed by the College Level and College Prep Faculty at PPCC for MAT 103, MAT 107, MAT 120, and MAT 135. A short presentation, followed by a panel discussion will give an overview of the structure of the co-requisite design process. The panelists will share their insights and challenges during the design process. Bring your questions, concerns, or comments, and join in.

**Confluence Building, Room 221** Innovation in the Classroom with OER and WebWork Problems

Brittni Lorton, Community College of Denver

Open Educational Resources (OER) are not only an excellent way to remove barriers for our students,

but are an excellent opportunity for faculty to bring their innovation and creativity to the classroom

curriculum. WebWorK is an open-source online homework platform for math and science curriculum

and within the WebWork system, you have the option of choosing pre-created homework problems for

your courses or creating your own problems. During this session, an overview of what WeBWorK and OER will be given. Then, examples of creative problems will be shown, as well as tips, tricks, and resources to create such problems yourself. This session is meant for all who are interested in seeing how we, as faculty, can be innovative with OER in our classrooms.

**Confluence Building, Room 223** We know statistics!

Jennifer Pickerel, Cengage Learning

Statistics is more than math, WebAssign is built for Stats. When it comes to online homework, most programs used for Statistics are designed almost entirely for a math course. After years of research, WebAssign for Statistics now boasts the most discipline specific features in the platform.

**11:35 AM – 12:15 PM, Lunch and Business Meeting**

**Room 105-109, Confluence Building**

-----------------------------------------Puzzle of the Day #2--------------------------------------

You have a perfectly spherical orange that you slice by making three equidistant horizontal cuts, creating four pieces of orange, each of the same height. Which piece or pieces has the most peel?

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**12:15 – 1:05 PM, Session 2**

## **Confluence Building, Room 217** CoADE Panel, The Future of Developmental Education in Colorado

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**Confluence Building, Room 219** *Working with At-Risk Students in Your Pearson MyLab Math or Statistics Courses*

Brooke Quinlan, Pearson

As developmental math courses are phased out and corequisite courses become more prevalent, we find

ourselves with more underprepared students than ever before. Come learn some best practices for improving student learning and remediating your developmental students while minimizing disruption to your college-level students. I will be discussing the following topics:

 Corequisite courses

 Interleaved practice

 Retrieval practice

 Features of MyLab Math and MyLab Statistics that support these methodologies, including but not

limited to:

o Assignment Tagging

o Student Tagging

o Integrated Review

o Companion Study Plan

o Personalized Homework

o Skill Builder

o Early Alerts

o Learning Catalytics

## **Confluence Building, Room 221** Transform your class with Microsoft One Note!

Brad Sullivan, President of Colorado Association for Developmental Education

Microsoft One Note is a powerful program for the educator! Use One note to create a space to deliver your lessons, and share that space with students and colleagues. Use a tablet or i-pad to deliver lectures using one note and record videos with Camtasia. Create a One Note workspace for students to post assignments, notes, and collaborate with other students. Create a notebook to deliver solutions to assignments. Use instructional weblinks imbedded in One Note.

**Conference Room** Visit with our vendors!

-----------------------------------------Puzzle of the Day #3--------------------------------------

True or False? The sum of the reciprocals of all prime numbers is infinity.

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**1:15 – 2:05 PM, Session 3**

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**Confluence Building, Room 221** *AMATYC’s Student Research League*

Holly Ashton, Pikes Peak Community College

The Student Research League opened last year as an AMATYC competition with cash awards for students. Come and find out how to enter, prepare, and win!

**Confluence Building, Room 223** *Integrating by the Method of Indivisibles*

Shawna Mahan, Pikes Peak Community College

We will examine the method of indivisibles, an early integration technique, described in John Wallis’s text, Arithmetica Infinitorum (1656). In the text, we see his contributions to the side-by-side development of symbolic algebra with integral calculus and the early struggles of analysis.

**Conference Room** Visit with our vendors!

-----------------------------------------Puzzle of the Day #4--------------------------------------

A frog starts on stair 1 and wants to land on stair n, jumping on every step inbetween exactly once. The frog can skip at most one stair on any given jump and can jump up or down.

For example, the frog could climb 5 stairs via the sequence 1,3,2,4,5 since each jump involves skipping at most one stair and each stair is used exactly once, starting at stair 1 and ending at stair 5.

Let F(*n*) be the number of ways the frog can traverse an *n*-step staircase with the above restrictions. Find a recurrence relation for F(*n*), then use that to find an explicit formula for F(*n*).

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**2:15 – 3:05 PM, Session 4**

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**Confluence Building, Room 219** *Exploration of Inquiry Based Learning in Trigonometry*

Dr Pam Peters, Pikes Peak Community College

“Inquiry Based Learning is a method of instruction that places the student, the subject, and their

interaction at the center of the learning experience. It transforms the role of the teacher from that of

dispensing knowledge to one of facilitating learning.”

-E Lee May, Salisbury State University.

Having heard and read about IBL and its record of success in facilitating deeper and more sustained

learning, I was intrigued. Historically, students do not retain much of trig and consequently have a

difficult time throughout the Calculus sequence, at best applying formulas rather than understand what

or why they are doing when using trig. I decided to pilot a few key lessons in my Trig classes, to see

whether they would provide better longer term effects, improving results in Calculus. I changed schools before I had sufficient time to gather enough data to have any meaningful analysis. However, the final exam results for the two semesters I used this method showed improvement, enough to justify further exploration. I propose to share a brief introduction and background to IBL (for the uninitiated), discuss the lessons and approach I used, and share the results, inviting further discussion from the attendees as to how to improve or proceed in my exploration.

**Confluence Building, Room 221** *Faculty Challenge: Student Mathematics League*

Karen Summerson, Pikes Peak Community College

The Student Mathematics League was founded in 1970. In 1981 AMATYC assumed sponsorship. Since then the League has grown to more than 165 colleges over thirty-five states and over 8000 community college math students. The test level is Pre-Calculus. All questions are short answer or multiple choice. Come and test yourself against the best & brightest of our students. There will be prizes!

**Conference Room** Visit with our vendors!

**3:05 – 3:30 PM Closing and Social Time**

**Confluence Building, Conference Room 105-109**

**Yummy Snacks Available**

**Thank you to McGraw-Hill for their generous sponsorship of our snacks.**

**Thanks again to all of our generous sponsors!**