## 2017 <br> ANNUAL CONFERENCE

## M C Maryland Council

What does your WHY equal? How does your passion translate?

- I love seeing the light bulb go off when students finally get it!

1 I am passionate about students speaking to each other mathematically.

- I am passionate about creating engaging lessons for students.
- I am passionate about having ALL students be successful in mathematics.

My Passions:

Friday, October 18, 2019 • Dundalk High School

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## MCIIM Mission and Goals

## MCTM MISSION

The Maryland Council of Teachers of Mathematics is a public voice of mathematics education, inspiring vision, providing leadership, offering professional development, and supporting equitable mathematics learning of the highest quality for all students.

## MCTM's GOALS

1. To encourage an active interest in mathematics and its teaching, and to work toward the improvement of mathematics education programs in Maryland.
2. To facilitate the exchange of ideas and facts about current problems, techniques, and experimental programs in the teaching of mathematics by providing such resources as conferences, meetings, newsletter, journal, research studies, and information services.
3. To encourage and assist other state and national organizations concerned with mathematics education at all levels.


## Message from the President

Welcome to the 2019 Maryland Council of Teachers of Mathematics (MCTM) Annual Conference! This year's theme, What does your WHY equal? How does your passion translate?, is designed to provide you the opportunity to reflect on elements of your personal mission and vision that fuel your drive to help students in Maryland grow in their ability to be successful in math. We are excited for the many sessions, including our featured speakers, that will provide you the opportunity to grow personally and professionally in the areas of planning, assessment and engagement.

MCTM is so pleased to work collaboratively with the administration and staff of Dundalk High School and the Baltimore County Public Schools. We thank you for allowing us to continue partnering with Baltimore County for our conference and once again being generous hosts this year.

I would also like to take a moment to thank the conference committee, who volunteered to serve many hours this past year to make arrangements for today's conference. Please take a moment to review the list of math educators who collaborated with us in this program and thank them for their work as your paths cross during the day.

We are so grateful for the sponsors and exhibitors who are supporting us today. Their generous donations make our state conference possible and allow us to continue providing you professional development that is comparable with regional and national NCTM events. Please take time today to visit our exhibitors and learn about the resources and products they provide.

Finally, let me take a moment to thank you for choosing to attend the 2019 MCTM Annual Conference. We are a volunteer non-profit organization that aims to inspire vision, provide leadership, and offer professional learning opportunities for our members. We hope that you find today's conference valuable to your work in education. We will be offering more professional learning opportunities for our members across the state throughout the year, so be sure to visit www.marylandmathematics.org to stay apprised of what is next. We are also always looking for volunteers to serve on committees or to assist with events. If you are interested, please feel free to reach out to the Executive Board.

We hope you have a wonderful conference experience!

## John Fontinell

John Fontinell

## 2018-2019 MCTMM Board Members

Note: Elected members for 2019-2020 will be announced at the MCTM Annual Meeting and Banquet and begin their term October 18th.

| Executive Board |  |
| :---: | :---: |
| President | John Fontinell |
| President-Elect | Robin White |
| Executive Director | Leslie Johnson |
| Recording Secretary | Ming Tomayko |
| Treasurer | Peter Lo |
| Nominations/Elections Chair | Jenny Novak |
| Elected Positions |  |
| Central Region Representative | Matthew Cox |
| Western Region Representative | Christine Therault |
| Southern Region Representative | Julie Taylor |
| Eastern Shore Representative | Vacant |
| Early Childhood Level Representative | Linda Schoenbrodt |
| Intermediate Level Representative | Michele Lerner |
| Middle Level Representative | Ashley Lancaster |
| High School Level Representative | Amy Goodman |
| Pre-Service Teacher Representative | Lilly Fontinell |
| Coaching Representative | Greta Richard |
| College Level Representative | Christy Graybeal |
| Government Relations Representative | Meredith Adams |
| Member-at-Large | Stacy Shaener |
| NCTM Liaison | Andrew Bleichfeld |
| Appointed Positions |  |
| 2019 Conference Chair | John Fontinell |
| Awards Chairperson | Damitra Newsome |
| Banner Editor-in-Chief | Christy Graybeal |
| Communications Chairperson | Alexandra Weyforth |
| MSDE Representative | Linda Schoenbrodt |
| Math Month Chairperson | Bonnie Kellner |
| Membership Chairperson | Soosan Faulk |
| New Teacher Resources | Holly Cheung |
| Nominations Chairperson | Jenny Novak |
| Webmaster | Meredith Adams |

## MCTM Conference Committee Members

| Conference Chair | John Fontinell |
| :--- | :--- |
| Awards | Damitra Newsome |
| Banquet | Peter Lo |
| Breakfast/Lunch | Laura Behrens and Liz Zinger |
| Corporate Sponsors/Exhibitors | Meredith Adams, Ashley Lancaster, <br> Christine Thereault, and Matthew Cox |
| Equipment/Technology | Jeff Starr and Chris Wojcik |
| Registration | Leslie Johnson |
| Hospitality | Samantha Hendershot |
| NCTM Sales | Andrew Bleichfield |
| On-Site Coordinator | Sarah Atwood-Starkey |
| Pre-Service Teachers | Christy Graybeal |
| Program | Michele Lerner and Jenny Novak |
| Signs | Andrea Lang |
| Special Needs | Bennie Kellner |
| Student Volunteers | Kevin Sams and Jomac Henderson |
| Accounting | Peter |

## Plan Your Day

## Complimentary Breakfast

A complimentary continental breakfast will be available from 7:30 a.m. to 9:00 a.m. in the Cafeteria.

## Lunch

Lunch will be available in the cafeteria from 11:15 a.m. to 1:00 p.m.

## NCTM Materials

In the exhibit area, come browse publications and products from the National Council of Teachers of Mathematics. All conference attendees save $20 \%$ on all books, posters, and mathematics products. Visit nctm.org/store and use code MDCTM19 to receive a $20 \%$ discount and FREE shipping! This code will be valid from 10/18/2019-10/26/2019.

## Room Capacity

Most rooms hold approximately 30 people. Fire code regulations prohibit over capacity.

## First Aid

If a medical emergency occurs, report to the registration area.

## Conference Registration

Please be sure to pick up your registration materials, complimentary bag, and name tag in the registration area outside of the gym.

Advance registration was offered on the website. All speakers and pre-registered participants should pick up conference packets at the registration tables.

On-site registration will begin at 7:30 a.m. in the registration area. On-site registration will be $\$ 50.00$.

## Speaker Registration

All speakers should report to the speaker registration area upon arrival to check in and receive a name tag and registration materials. There will be student volunteers available to assist speakers with the transition to their rooms.

## Speaker Hospitality Room

There is a hospitality room available for presenters. Information regarding location will be distributed at speaker check-in. Volunteers will be available throughout the day to provide general assistance and to answer questions.

## Program Supplement

Be sure to check out the program supplement at the conference to see any last minute program changes!

## Permission To Tape/Record

Permission to tape or record any session is at the discretion of the presenter(s). Please ask permission of the speaker prior to recording.

## Special Services

There are handicapped parking spaces and accessible entrances at the school. Selected sessions throughout the day will be interpreted based on online registration request. A schedule of the interpreted sessions will be available at the Special Needs desk in the registration area. Other appropriate accommodations for individuals with disabilities may be provided upon request online.

## Student Assistants

Students will be serving as hosts during the day of the conference. They will be available to help speakers and other conference attendees. Look for students wearing the MCTM conference t-shirts.

## Raffle

A raffle will be held in the cafeteria immediately following the final session. Tickets will be distributed before the afternoon keynote address at the entrance to the cafeteria. The raffle will begin at 2:40 p.m. Educational products donated by the exhibitors will be raffled as well as additional prizes provided by MCTM. You must be present to win.

## Carpooling

All carpooling participants will receive additional raffle tickets at the registration booth upon arrival. Do the math! This increases your chances of winning.

| $7: 30 \mathrm{am}-9: 00 \mathrm{am}$ | Registration and Continental Breakfast |
| :--- | :--- |
| 8:30 am - 9:00 am | Opening Session |
| $9: 00 \mathrm{am}-10: 00 \mathrm{am}$ | Keynote Speaker <br> Dr. Faith Muirhead |
| $10: 15 \mathrm{am}-11: 15 \mathrm{am}$ | Session I Regular Sessions |
| $10: 15 \mathrm{am}-11: 45 \mathrm{am}$ | Session II Extended Sessions |
| $11: 15 \mathrm{am}-1: 00 \mathrm{pm}$ | Lunch/Exhibits |
| $12: 15 \mathrm{pm}-12: 45 \mathrm{pm}$ | Session III Burst Sessions |
| $12: 15 \mathrm{pm}-1: 15 \mathrm{pm}$ | Session IV Regular Sessions |
| $1: 00 \mathrm{pm}-2: 30 \mathrm{pm}$ | Session V Extended Sessions |
| $1: 30 \mathrm{pm}-2: 30 \mathrm{pm}$ | Session VI Regular Sessions |
| $2: 40 \mathrm{pm}-3: 00 \mathrm{pm}$ | Closing and Raffle |

## Keynote Speaker

## 9:00 a.m. to 10:00 a.m. Auditorium

## The Subtle Bigotry of Low Expectations

The language of schooling seems to dictate the ranking, comparing, and ordering of children. Phrases such as low level, high level, low kids, high kids, etc. are ubiquitous in school. This language creeps into teacher practice, into our questions, the tasks we choose, the language we use, the expectations we hold. This session will address issues of equity that result from careless language choices and how to bring this issue into specific relief.

Faith Muirhead, Ph.D.


Faith Muirhead, Ph.D., was formerly a secondary mathematics and physics teacher in NYC public schools who currently serves as the Senior Associate Director of the Professional Development Center for Educators and as an Assistant Professor at the University of Delaware. She has written professional development materials, taught for nearly two decades in both traditional and non-traditional teacher certification programs, worked as a mathematics coach, a coach for mentor teachers and coaches, and served as project director for the targeted MSPinNYC. She is immersed the coaching of both practicing and prospective teachers in the midst of teaching in order to identify and explore how to improve teaching and learning. She is passionate about students and teachers working in high-need schools in urban and rural contexts, particularly from typically underrepresented groups.

## MCHIM Excellence In Teaching Award Winners

## Congratulations 2019 Winners!

Beginning Teacher Award Caroline Sneller<br>Bonnie Branch Middle School, Howard County Public Schools<br>Elementary Teacher Award Lynsey Hayden<br>Dynard Elementary School, St. Mary's County Public Schools<br>\title{ Middle School Teacher Award Rebecca Stryker }<br>Patuxent Valley Middle School, Howard County Public Schools<br>High School Teacher Award<br>Kelly Rupprecht<br>Marriotts Ridge High School, Howard County Public Schools<br>\section*{Teacher Leader Award<br><br>Greta Richard}<br>Harpers Choice Middle School and Wilde Lake Middle School, Howard County Public Schools

## Sponsors and Exhibitors

The Maryland Council of Teachers of Mathematics would like to thank our sponsors. Without their generous support, this event would not be possible.

| Platinum Level Sponsors |  |
| :---: | :---: |
| Texas Instruments |  |
| TEXAS INSTRUMENTS |  |
| Houghton Mifflin Harcourt |  |
| Houghton Mifflin Harcourt |  |
| Silver Level Sponsors |  |
| Explore eLearning <br> Explorëlearning ${ }^{\circ}$ |  |
| Curriculum Associates Curriculum Associates |  |
| Big Ideas Learning <br> BIGIDEAS LEARNING。 |  |
| Basic Level Sponsors |  |
| Ascend Education | CPM Educational Program |
| PAEMST | Hood College Graduate School |
| EasyWorksheet.com | Carnegie Learning |

Learning Cycles


Books will also be on sale at the NCTM Bookstore!
Many of our exhibitors are participating in a scavenger hunt. When you check in at the registration tables, you will receive a scavenger hunt card. Complete the scavenger hunt to earn extra tickets for the door prizes!

Certificate of Attendance


| Session | Thime | $\mathbf{1}^{\text {st }}$ Choice | 2 $^{\text {nd }}$ Choice |
| :---: | :---: | :---: | :---: |
| Exhibits | $8: 00 \mathrm{am}-1: 30 \mathrm{pm}$ |  |  |
| Morning Keynote | $9: 00 \mathrm{am}-10: 00 \mathrm{am}$ |  |  |
| I | $10: 15 \mathrm{am}-11: 15 \mathrm{am}$ |  |  |
| II | $10: 15 \mathrm{am}-11: 45 \mathrm{am}$ |  |  |
| III | $12: 15 \mathrm{am}-12: 45 \mathrm{pm}$ |  |  |
| IV | $1: 15 \mathrm{pm}-1: 15 \mathrm{pm}$ |  |  |
| V | $1: 30 \mathrm{pm}-2: 30 \mathrm{pm}$ |  |  |
| VI |  |  |  |

Lunch available in the Cafeteria from 11:15 am to 1:00 pm.
Raffle/Door Prizes in the Cafeteria at 2:40 pm.


Highlight Key

| Blue <br> Exhibitor <br> Showcase | Orange <br> Leaders/Coaches/ <br> Teacher Educators | Red <br> Elementary | Green <br> Middle School | Purple <br> High School// <br> College | None <br> Multiple <br> Grade Bands |
| :---: | :---: | :---: | :---: | :---: | :---: |


| Session I |
| :--- |
| Regular Sessions |
| $10: 15-11: 15$ |
| $\mathbf{1}$ Math is |
| Everywhere! How |
| to Use Real World |
| Examples \& Apply |
| them in Your Math |
| Classroom |
| (General Interest) |
| $\mathbf{1}$ Build More |
| Resilient Kids by |
| Implementing Growth |
| Mindset |
| (General Interest) |
| $\mathbf{2}$ CoveRing the |
| bAses: CRA Using |
| Base Ten Blocks |
| -Part 1 |
| (General Interest) |
| $\mathbf{3}$ Communicating |
| Understanding in |
| Math |
| (General Interest) |
| $\mathbf{4}$ Manipulatives |
| as a Tool for |
| Differentiation |
| (PreK-5) |
| $\mathbf{5}$ Rethinking the |
| School-Home |
| Connection (PreK-5) |
| $\mathbf{6}$ Solving Rigorous |
| Math Tasks Using |
| a Team-Based |
| Approach (PreK-5) |
| $\mathbf{7}$ Making |
| Math Matter: |
| Using activities |
| to humanize |
| mathematics for all |
| students (PreK-8) |


| 8 StrengthsBased Teaching Turnarounds: Discover and Leverage Your Students Strengths through Instructional Design (PreK-8) | 16 Where's the | Session II | Session III |
| :---: | :---: | :---: | :---: |
|  | Financial Risk? | Extended | Burst Sessio |
|  | Breaking the |  | 12:15-12:45 |
|  | Consistently | $10: 15-11: 45$ | 12.15-12.45 |
|  | Informational Cycle as it pertains to Risk Management and | 24 Bead Strings 101 (PreK-5) | 33 Hood College's Graduate Programs (General Interest) |
| 9 Fostering Curiosity about Volume Formulas (6-8) | Insurance Standards within Financial Literacy Curricula | 25 Growing <br> Mathematicians with Number Lines | 34 Technology and Games in Elementary Mathematics (3-5) |
|  | (6-12) | (Prek-5, | 35 Jumping Circles |
| 10 Multiplying Fractions is More than Just a Rule! (3-5) | 17 College | Exhibitor Showcase) | (3-5) |
|  | Preparatory <br> Mathematics (6-12, <br> Exhibitor Showcase) | 26 Robotics in the Mathematics Classroom (6-12, | 36 Book Studies that Pack a Punch! (3-12) |
| 11 Let's Give Them Something to Talk About! -Building Mathematical Language and Understanding Through Discussions (6-12, Leaders) | 18 Integration: More | Exhibitor Showcase) | 37 Please Submit |
|  | than area under a curve (9-12) | 27 Fun with Problem Solving! (3-12) | Your Response in the Space Provided... |
|  | 19 Writing to | 28 Arrêter de parler | (6-12) |
|  | encourage learning in Mathematics (9-12) | !! Using Protocols to Promote Student Engagement and | 38 Building Better Problem Solvers One Cell at a Time (9-12) |
| 12 Math Talks in the Secondary Classroom (6-12) | 20 Taxicab Geometry: Playing in | Discourse during Instruction (6-8) | 39 Coaching Lab: |
|  | a Mathematical City | 29 Put on Your | Situations (Leaders) |
| 13 Building Activities in Desmos Activity Builder, Part I (6-12) | 21 Math Soup | Thinking MCAP (6-12) | Session IV |
|  | (9-12) | 30 Explorations with | Regular Sessions |
| 14 Creating Activities and Polygraphs in Desmos (6-12) | 22 Logarithms: | Square, Triangular, | 2:15 |
|  | We Can Do Better! (9-12) | Tetrahedral, <br> Pentagonal and other <br> Figurate Numbers | 40 The Impact of the Mathematics |
|  | 23 What makes | (6-12) | Identity <br> (General Interest) |
| 15 OMG! ON for some MATH GROWTH (6-12) | math coaching successful? Tales from a research study on MQI | 31 Filling the Gaps with Algebra Tiles (6-12) | 41 Using Questioning to Improve Student |
|  | Coaching (Leaders) | 32 Building Equity and Thinking In Math | Thinking (General Interest) |
|  |  | Classrooms (6-12) | 42 Introducing <br> MCAP Grades 3-5 <br> Mathematics (PreK-5) |


| 43 Successful Task Implementation (PreK-5) | 52 Why Formative Assessment? (6-12) | 61 Wait! Where are the Numbers? (PreK-5) | 70 Logarithm Properties Jigsaw (9-12) |
| :---: | :---: | :---: | :---: |
| 44 I can show what I hear: Connecting music | 53 The Number Line: A Deep Dive (6-12) | 62 If Mathematics is a Universal Language, Why Do So Few Speak It? (3-8, Exhibitor Showcase) | Session VI <br> Regular Sessions $1: 30-2: 30$ |
| to mathemat | 54 Looking For Zebras: Embracing Unexpected Solutions to Pattern Tasks (6-12) |  |  |
| (PreK- |  |  | 71 Changing the Stigma that Math is "Hard" (General Interest) |
| 45 Making the Most of Meaningful Models (PreK-5, |  | 63 Effective Questioning and Discussion |  |
| Exhibitor Showcase) | 55 Coding in Math Class! (6-12, Exhibitor Showcase) | Techniques (3-12) | 72 Let's Dispel the Myths About Women and Mathematics (General Interest) |
| 46 Keeping It Real: Making Real-World |  | 64 Math 1-2-3 to X-Y-Z. Explore |  |
| Connections in the | 56 Get Outta My Swamp! Shrek Helps Calculus Students Master Optimization (9-12) | How One Strategy Builds a Cohesive Conceptual Structur Promoting Equity in the Classroom (3-12) |  |
| Math Classroom (K-5) |  |  | 73 From Obscurity to Focus: One District's Journey in Bringing Clarity and Purpose to Data Dialogues (General Interest) |
| 47 Build your Toolbox: Strategies |  |  |  |
| to Promote Growth with Modeling and Reasoning (1-5) | 57 Monopoly and Regression? (9-12) | 65 Shearing: Not Sheep but Shapes. Unpacking Geometry Coherence (6-8) |  |
| 48 CoveRing the bAses: CRA Using Base Ten Blocks | 58 Inverse <br> Functions: A Lesson <br> Study Across Three <br> Classrooms (9-12) |  | 74 Planning and Teaching with ESOL in Mind (PreK-5) |
| -Part 2 <br> (3-5, Leaders) | Session V <br> Extended <br> Sessions $1: 00-2: 30$ | 66 Reversing "I Do, We Do, You Do" with Technology (6-12) | 75 Collaborative Planning Menu: A Resource Tool (PreK-5) |
| 49 The Make 10! Challenge: |  | 67 Building <br> Activities in Desmos, <br> Part II (6-12) |  |
| Representing |  |  | 76 Beyond <br> Explaining an <br> Answer: Writing for a variety of purposes in the Mathematics Classroom (PreK-5) |
| Operations to Understand the Order of Operations (3-8) | 59 Creating a Peer Coaching Collaborative in Your School (General Interest) | 68 Using Algebra <br> Tiles ...From <br> Polynomials to <br> Completing the <br> Square (6-12, <br> Exhibitor Showcase) |  |
| 50 Coaching: |  |  |  |
| A Relationship Building Approach (6-8, Leaders) | 60 Math, Coding, and Programming... Oh My! Connecting Coding to the Standards for Mathematical Practice! (PreK-2) | 69 Premeditation: <br> A Thoughtful, Comprehensive Approach to Improving Students' MCAP Performance (9-12) | 77 Making Sense of Number Sense Routines (PreK-5) |
| 51 Empowering Teachers with Instructional Routines (6-12, Leaders) |  |  | 78 Using Tiered Tasks to Foster Mathematical Proficiency in All Students (PreK-5) |

61 Wait! Where are the Numbers? (Prek-5)

62 If Mathematics is a Universal Language, Why Do So
Few Speak It? (3-8, Exhibitor Showcase)

63 Effective Questioning and Discussion Techniques (3-12)

64 Math 1-2-3 to $\mathrm{X}-\mathrm{Y}-\mathrm{Z}$. Explore How One Strategy Builds a Cohesive Conceptual Structure Promoting Equity e classroom 65 Shearing: Not Sheep but Shapes. Unpacking Geometry Coherence (6-8)

66 Reversing "I Do, We Do, You Do" with 67 Building Activities in Desmos, Part II (6-12)

68 Using Algebra
Tiles ...From Polynomials to mpleting the Square (6-12, Exhibitor Showcase)

69 Premeditation: A Thoughtful, prehensive Improving Students' MCAP Performance (9-12)

79 AA4A (Algebra Access for All) (3-12)

80 Computer Science Computational
Thinking in $\mathrm{K}-8$
Classrooms (K-8)
81 Learning Mathematical Concepts Through Authentic Learning (6-12)

82 Connecting the Current Topics in Mathematics Education (6-12)

83 Basketball Functions: Engaging Students with Interactive Graphs (6-12)

84 Coding ... There IS Math Involved (6-12)

85 The Why and How of Integrating Data Centric Lessons into Your Classroom (9-12)

86 Keep Calm and Coach (Leaders)

87 Residency -It's Not Just for Doctors (Leaders)

## Sessions and Speakers

## Session I <br> Regular Sessions <br> 10:15-11:15 am

## 1 Build More Resilient Kids by Implementing Growth Mindset

General
Room 3109
Do your students give up too easily? Are they afraid to approach a challenge because they're worried they might not "look smart"? Hear how Growth Mindset has transformed one school into a place where "pedestal kids" have become "gritty kids."

## Mark Minkus

Community Day School

## 2 CoveRing the bAses: CRA Using Base Ten Blocks, Part 1

General Interest
Room 3140
The base ten block is the most unappreciated manipulative that we all have. Join in this session to "play" with blocks to develop early estimation, addition, subtraction strategies. Learn new ways for using "snap" cubes to develop understanding and ways to move into using these gems to breathe new life into your math class and students' understanding through the CRA approach.

## Ryan Amore

Charles County Public Schools

## 3 Communicating Understanding in Math

General Interest
Room 3145
This workshop will encourage student voice to deepen their mathematical understanding through exploration. Teachers will learn instructional and technology integration strategies to improve student critical thinking, writing, and communicating mathematical concepts to increase understanding and long term retention.

## Chris McCaffrey

Wilson School District

## 1. Manipulatives as a Tool for Differentiation

Come explore how to use virtual manipulatives to help differentiate instruction in your class. Strategies will be shared to help students with disabilities and students working at different levels.

## Kevin Dykema

Mattawan Consolidated Schools

## 5 Rethinking the School-Home Connection

PreK-5
Room 2181
Tips for creating and fostering a positive schoolhome connection concerning elementary math education. The session will address navigating around guardian math anxiety, strategies that don't always align with classroom instruction and how to build support and parent capacity for helping students at home. Alternatives to traditional homework structures will also be shared.

## J. Megan Maletto

Charles County Public Schools

## 6 Solving Rigorous Math Tasks Using a Team-Based Approach

PreK-5
Room 3146
This session will help teachers choose rigorous tasks for all learners using a team-based structure. We will show the elements of a rigorous task and how to create a team structure using roles in order to engage students for a deeper understanding of mathematical concepts.

Casey Ament
Megan Dooley
Charles County Public Schools

## 1 <br> Making Math Matter: Using activities to humanize mathematics for all students.

PreK- 8
Room 3106
In this session, participants will learn about innovative ways to engage all learners of mathematics through creating and administering interest surveys, matching curriculum to community, and giving students the tools to create success criteria for their individual learning style.

Taniesha Goulbourne
Julie Rankin
Charles County Public Schools

## 1 Strengths-Based Teaching <br> (1)Turnarounds: Discover and Leverage Your Students Strengths through Instructional Design

Room 3110
We have been traditionally taught to identify and remediate students' mathematical misconceptions and weaknesses. This session is about reframing students' mathematical learning opportunities by identifying students' strengths to develop powerful and strategic learning opportunities that capitalize on those strengths to build mathematical success.

## Beth Kobett

Stevenson University

## Fostering Curiosity about Volume Formulas

6-8
In this session we will share several ideas for fostering student curiosity about the formulas for volume of prisms, cylinders, pyramids, cones, and spheres. We will focus on the derivation of the formulas and connections amongst them.

Christy Graybeal
Victoria Green
Hood College

## 10 <br> Multiplying Fractions is More than Just a Rule!

3-5
Room 2182
Multiplying fractions needs to be taught conceptually not through a rule. Participants will compare mathematical representations vs strategies when multiplying fractions and apply both using manipulatives and visual models. Participants will have an opportunity to connect what they have learned and apply it to high quality tasks in context.

Kelly Healey
Denise Bogart
Howard County Public School System

## 11 <br> Let's Give Them Something to Talk About! Building Mathematical Language and Understanding Through Discussions

6-12, Leaders
Room 3118
Develop mathematical language routines through class discussions that help students build precision in developing and communicating ideas. Explore the use of Discussion Supports, Take Turns, and Critique, Correct, Clarify, and consider how you can use these strategies regularly in your math classroom.

AnnMarie Varlotta<br>Greta Richard<br>Howard County Public School System

## 12 Math Talks in the Secondary Classroom

In this session, you will learn the what, how, and why of math talks. We will share resources to get you started using math talks in your classroom and explore discourse in the secondary classroom.

## Salli Waraksa

Laura Potter
Baltimore County Public Schools

## 1 Building Activities in Desmos Activity Builder, Part I

6-12

Room 2180
Participants will develop comfort with the platform.
They will determine how to utilize Desmos Activities in their classrooms, features of the calculator, and how to use the Calculator as an effective teaching tool in their classrooms.

Brett Parker
Chris Wright
Baltimore County Public Schools

## 14. Creating Activities and

6-12
Room 2186
Participants will learn how to create activities, polygraphs and card sorts in Desmos. Activities can be used to teach conceptually while polygraphs and card sorts can be used as assessment. Participants will need to bring their own laptop or tablet.

## Todd Moyer

Towson University

## 5 OMG! ON for some MATH GROWTH

6-12
Room 3119
It is high time that we increase student scores and boost their confidence to aim for success.This session will offer some meaningful activities for our Math learners using a mixture of traditional and technology-related resources. Now is the time for students to fully contribute and be highly accountable for their own learning.
Janice Magauay
Charles Carroll Middle School

## Mbulwa Musyoki

Prince George's County Public Schools

## 16 <br> Where's the Financial Risk? Breaking the Consistently Inconsistent Informational Cycle as it pertains to Risk Management and Insurance Standards within Financial Literacy Curricula.

6-12
Room 3121
If financial risk is an important aptitude to understand, then why aren't risk management standards within financial literacy curricula specifically focused on this competency? This session intends to help evolve, advance, and understand this question through new research and discussion.

## Michael Ladick

Allegheny County Public Schools

## 17 College Preparatory Mathematics

6-12, Exhibitor Showcase
Room 3156
The purpose of this session is to expose you to a mathematics curriculum that will engage your students in collaborative learning, problem-based learning, and mixed spaced practice.

## JC Lewis

Timothy Scripko
CPM Educational Program

## 1 Integration: More than area under a curve

9-12
Room 3139
Participants will experience a Calculus lesson that introduces integration without the typical focus on area under the curve. The activity will help high school teachers see how topics they teach, such as constant rate of change, are leveraged in Calculus.

## Kristin Frank

Rachael Talbert
Towson University

## 19 <br> Writing to encourage learning in Mathematics

9-12

Room 3138
Session will provide strategies and activities to use writing in Mathematics to provide equity and rigor for all students. Writing creates a safe space for students to think and process the topic at their level.

Crystal Green<br>Sarah Roden<br>Anne Arundel County Public Schools

## 20 <br> Taxicab Geometry: <br> Playing in a Mathematical City <br> 9-12 <br> Room 3134

In this interactive session, we will explore and play in a non-Euclidean geometric system called Taxicab Geometry. We will investigate familiar ideas like lines and circles in an unfamiliar way to experience novel geometry while attending to structure.

## Sandy Spitzer

Michelle Tarr
Alyssa Eller
Kourtney Harrison
Towson University,
Howard County Public Schools

## D Math Soup <br> 9-12

Room 3133
A technique for explaining concepts of common multiples and factors is developed making use of analogies to logic questions facing a chef who is wondering what ingredients need to be bought.

## Robert Koca

$C C B C$

## 27 Logarithms: We Can Do Better!

9-12
Room 3120
Ever wonder why students have such an aversion to logarithms? Students can estimate the square root of 7 , yet ask them to estimate log base 2 of 7 and they are stumped! Participants will discuss the root causes behind why the traditional instruction on logarithms fails our students. Walk away with a better approach to instruction that begins with number sense and number talks. Then use that foundation to foster student discovery and understanding of the properties, graphs, and solving with logarithms. Additionally, embedded in the lessons are instructional and language routines to reinforce the teaching and student math practices.

## Meredith Adams

Howard County Public School System

## 7 What makes math coaching successful? <br> Tales from a research study on MQI Coaching

## Leaders

Room 3127
The Mathematical Quality of Instruction rubric (MQI) grew from a research instrument to a tool for improving instruction. In this session, participants experience elements of the MQI Coaching model and hear research findings from a randomized trial of the intervention.

## Jackie Kearney

Center for Education Policy Research at Harvard University

## Session II <br> Extended Sessions <br> 10:15 am -11:45 am <br> - 1 Bead Strings 101

PreK-5
Room 2152
Are you looking for a different way to connect concepts from a concrete representation to a more abstract representation? Participants will explore how 100 Bead Strings can do that very thing. You will learn what they are, how they can be used for more than just counting, and see how to make connections from the concrete to the abstract.

Jennifer Stairs
Kristen Mangus
Howard County Public School System

## 2- Growing Mathematicians with Number Lines

PreK-5, Exhibitor Showcase
Room 3157
In this interactive session for K-5 educators, participants will explore the progression from number tracks to number lines and engage in games and activities, using both digital and print resources, to help students improve their understanding of relative position and number magnitude.

## Melinda Schwartz

ORIGO Education

## - $\quad$ Robotics in the Mathematics Classroom

6-12, Exhibitor Showcase
Room 3148
Join this hands-on session to learn how to make students beg to learn math! When students learn to "drive" the TI Rover, they are fully engaged and asking for more math. They don't want to leave class! Free activities will be shared. No coding experience necessary - come join the fun!

## Robyn Poulsen

Texas Instruments

## 27 Fun with Problem Solving!

3-12
Room 2161
This workshop features classroom-tested numerical and geometric problem solving activities that are suitable for students in grades 3 through 12 , inclusive. These unique hands-on activities will be presented using physical materials and cooperative small groups.

Michael Krach<br>Phyllis Hillwig<br>Emma Talbot<br>Towson University

## 7 P Arrêter de parler !! <br> Using Protocols to Promote Student Engagement and Discourse during Instruction

6-8

Room 2170
To provide teachers with alternatives to stand and deliver and independent practice routines, Anne Arundel County Public Schools developed 18 protocols that promote student engagement and discourse. Come experience several protocols that you can immediately implement in your classrooms.

Mary Rathlev<br>Nicole Howard<br>Anne Arundel County Public Schools



## 9 Put on Your Thinking MCAP

6-12
Room 2162
Calling all middle school mathematics teachers! Are you excited for the new MCAP? Are you curious about how these new assessments will be different (or the same) as the old Maryland assessments? Would you like to know how assessment rubrics have changed and how the assessments are scored? Would you like to view some sample items? Then this is YOUR session! Come learn about the Grade 6, Grade 7, and Grade 8 MCAP mathematics assessments. Explore the new Evidence Statements, test out the new rubrics with sample items, learn about the new MCAP design, and have your questions answered.

## Nina Riggs

Maryland State Department of Education

## 30 <br> Explorations with Square, Triangular, Tetrahedral, Pentagonal and other Figurate Numbers

## 6-12

Room 2163
Figurate numbers exhibit a number of beautiful patterns. In this hands-on workshop, participants will explore patterns and relationships with triangular, square, tetrahedral, pentagonal and other figurate numbers. The diagonals of Pascal's triangle and technology will be incorporated in the workshop.

## Jay Schiffman

Rowan University

## 31 <br> Filling the Gaps with Algebra Tiles <br> 6-12

Room 2164
Using a CRA (Concrete, Abstract, Representational) Model, teachers will examine strategies to reduce misconceptions in algebraic thinking through the use of Algebra Tiles to build conceptual understanding in students. Participants will examine opportunities to support student development of topics from Grade 6 through Algebra 2, that include simplifying expressions, solving linear equations, substitution, and quadratic expressions.
Chris Pirie
Kasey Barr
Baltimore County Public Schools

## 02 Building Equity and Thinking In Math Classrooms

Learn how to implement Visually Random Groups and Vertical Non-Permanent Surfaces in your classroom pedagogy to improve student engagement in task group work and break down social barriers to problem solving.

## Stacie Marvin

Howard County Public School System

## Session III

## Burst Sessions

12:15 pm -12:45 pm

## D Hood College's Graduate Programs

General interest
Room 2172
Learn about Hood College's graduate programs in Mathematics Education (middle and high school tracks) and Mathematics Instructional Leadership (PreK-Grade 2 and Grades 4-9 tracks).

## Christy Graybeal

Hood College

## 9/T Technology and Games in Elementary Mathematics

Join pre-service teachers from McDaniel College to discover creative uses of games and other technologies in elementary mathematics. We will be targeting fact fluency and basic operations through online games, board games and more.

Jamie Wimmer<br>Haley Chan<br>McDaniel College

## 55 Jumping Circles

3-5
Room 2161
We have created and implemented a variety of activities that focus on kinesthetic learning. The activities all include hula hoops and physical interaction. The students learn concepts like fractions and analog clocks, all while putting their bodies in motion. We have researched, collected, and analyzed data to show how this benefits students in the mathematics classroom.
Carly Berry
Aryn Ramey
Diana Cheng
Michael Krach
Towson University

## $3 \int^{\text {Book Studies that Pack a Punch! }}$

3-12
Room 2169
What professional resource is worth reading and will have immediate and lasting change in classrooms? Don't have funding? Let's talk about worthwhile titles and ways to help support the work you are doing.

Christine Thereault<br>Frederick County Public Schools

## 07 Please Submit Your Response in the Space Provided... <br> 6-12 <br> Room 2162

With 1-to-1 devices becoming more common in the classroom, students and teachers have a variety of online resources that promote and enhance mathematical reasoning and literacy. Participants will examine these tools and gain an insight on how they can be valuable assets in our instruction.

## Peter Lo

Howard County Public School System

## 21 Building Better Problem Solvers One Cell at a Time

9-12
Room 2163
Use of Excel and Excel functions in the classroom to allow students to problem solve and use technology to their benefit. By using excel for basic operations and even to build/use formulas, we can put more emphasis on the topic and not the meniscal calculations that give students wrong answers and deviate them away from math.

## Craig Chatterton

Harford County Public Schools

## 9 Coaching Lab: <br> Dealing with Difficult Situations Leaders <br> Room 2164

Are you dealing with a difficult coaching situation? In this burst session, we will have an opportunity to brainstorm ways to address challenging situations and role play strategies for addressing the difficult situation.

## Jenny Novak

Howard County Public School System

Session IV<br>Regular Sessions<br>12:15 pm-1:15 pm

## 40 <br> The Impact of the Mathematics Identity

General Interest
Room 3109
How does your identify affect your teaching of mathematics? How does your students' identity affect how they learn mathematics? We will share lessons learned and offer suggestions for teacher coaching that we learned from our book study of The Impact of Identity in K-8 Mathematics.

## Smitha Hughes

Sheila Burke
Baltimore City Public Schools

## 1, Using Questioning to Improve Student Thinking

General Interest
Room 3110
Teachers ask many questions every day. How can teachers use questioning effectively to improve achievement? This session examines how teachers plan, ask, and reflect on their use of questions, providing tools to create environments where students do the sense making.

## Ed Nolan

Towson University

## $1-$ Introducing MCAP Grades 3-5 Mathematics

## Pre-5

Room 2182
In this session, participants will be introduced to the Maryland Comprehensive Assessment Program (MCAP). This assessment is the accountability assessment that will be given to students in grades $3-5$, spring of 2020. Come and hear about it's features (new and improved) and participate in using the rubric that will be used to score reasoning and modeling constructive response items.

## Linda Schoenbrodt

Maryland State Department of Education

## 1 Successful Task Implementation

PreK-5

Room 3118
In this session participants will explore the impact that instructional strategies play in either maintaining or declining the cognitive demand of a task.

Nicholas Pyzik

## Sharon Brown

Baltimore County Public Schools

## / I I can show what I hear: Connecting music to mathematics

PreK-5
Room 3119
Come and explore tasks that will engage your students in connecting different representations such as musical notations and Cuisenaire rods. A modeling task sequence to promote conceptual understanding of measurement ideas and unit concepts will be shared.

Tatiana Iliana<br>Emma Talbot<br>Melike Kara<br>Kimberly Corum<br>Towson University

## Making the Most of Meaningful Models

PreK-5, Exhibitor Showcase

Room 3157
Versatile models help teachers to articulate topics across elementary grades. Participants will discover practical activities using number lines, dot arrays, and area representations that can be used to teach major ideas involving basic facts, whole numbers, fractions, decimals, and computation strategies with deep conceptual understanding.

## Melinda Schwartz

ORIGO Education

## I Keeping It Real: Making RealWorld Connections in the Math Classroom

K-5

Room 3106
We will present the benefits of making real-world connections in the classroom to the math concepts being taught. We will also share ideas of how to make real-world and authentic math connections throughout the school year.
Lynsey Hayden
Andrea Morris
St. Mary's County Public Schools

## 47 <br> Build your Toolbox: <br> Strategies to Promote Growth with Modeling and Reasoning

## 1-5

Room 3116
Participants reflect on modeling and reasoning SMPs, analyze reasoning tasks including student work samples and determine instructional next steps. Walk away with sample rubrics, strategy menu and monitoring tools to promote depth and student growth within grade level standards.

Penelope Alberti
Cheryl Wallace
Anne Arundel County Public Schools

## 1 CoveRing the bAses: CRA Using Base Ten Blocks, Part 2

3-5, Leaders
Room 3140
Older kiddos like to play too! The base ten block is the most unappreciated manipulative that we all have. Join in this session to "play" with blocks to develop estimation, multiplication, and division strategies. We will also use the blocks to strengthen area, perimeter and volume. Learn new ways to use these gems to breathe new life into your math class and students' understanding through the CRA approach.

## Ryan Amore

Charles County Public Schools

## 11 The Make 10! Challenge: Representing Operations to Understand the Order of Operations

## 3-8

Room 2186
Ever wonder why the order of operations works the way it does or how to teach it conceptually? Engage in the Make 10! Challenge to develop understandings of the order of operations through representations and the meanings of the operations. This groupworthy task allows for significant personalization, customization, and differentiation.

Barbara Swartz
McDaniel College

## 7 Coaching: A Relationship Building Approach

Learn how to use relationship building strategies to build the teacher's capacity to make instructional decisions, self-reflections on their practice and support student-centered learning through literacy.

## Marsha Hubbard

Ian Thorne
Prince George's County Public Schools

## 5 Empowering Teachers with Instructional Routines

6-12, Leaders
Room 3120
In this session coaches/leaders/teachers will learn how to motivate and inform all of the benefits of instructional routines within the classroom. Guidance on the importance of observing student's mathematical thinking, rewards for students, and equity based teaching practices.

Andrea Lang<br>Meredith Adams<br>Howard County Public School System

## Why Formative Assessment?

6-12
Room 3127
In this session, participants will learn more about formative assessment strategies, when to implement it into a lesson, and how to adjust a lesson off of formative assessment.

Christopher Houck
Pamela Xenakis
Baltimore County Public Schools

## $4{ }^{4}$ The Number Line: A Deep Dive

6-12
Room 3133
As mathematics teachers, numbers are our passion, and one well-known mathematical structure can help reveal this passion. Together we will dive into the number line to reveal special sequences and other rich mathematical curiosities, which will be unpacked and represented.

## Mike Long

Howard County Community College

## 54 <br> Looking For Zebras: <br> Embracing Unexpected Solutions to Pattern Tasks <br> 6-12 <br> Room 3134

While we often associate visual patterns with a single solution, our session will push participants to reevaluate the role of pattern ambiguity. In order to allow for mathematical honesty while meeting specific mathematical goals, we offer a few suggestions to open up pattern tasks.

Dana Grosser-Clarkson<br>Elizabeth Fleming<br>University of Maryland

## 45 Coding in Math Class!

6-12, Exhibitor Showcase
Room 3148
Your calculator can code! I'll demonstrate how I effectively incorporated coding into my math classes - you can too! We'll even make music! No experience required.

Robyn Poulsen

Texas Instruments

## - Get Outta My Swamp! Shrek Helps Calculus Students Master Optimization

9-12
Room 3139
In this session, participants will use substitution and the distance formula to create a function to model Shrek's swamp, then use Desmos to connect concepts regarding the graph of a function and its derivative in order to learn optimization.

## Rachel Schmitz

Gabriella Harris
Baltimore County Public Schools

## 57 Monopoly and Regression?

9-12
Room 3138
Participants will engage in a problem that can address four S-ID standards that also makes use of technology to illustrate the conceptual understanding in the standards.

Levi Straight
Baltimore City Public Schools

## ?( Inverse Functions: A Lesson Study Across Three Classrooms

Room 3121

This session will explore a lesson study done by the three presenters on inverse functions, an important concept in Algebra 2. Participants will explore the math task themselves, and engage in reflective discussion about how the three presenters were able to learn from each other's implementations in their respective classrooms.

Emily Murdock Neha Soni
Montgomery County Public Schools

## Session V <br> Extended Sessions <br> 1:00-2:30 pm

## 5 Creating a Peer Coaching Collaborative in Your School

General Interest
Room 2179
Participants will unpack the purposes of classroom observations, discuss various models of peer coaching, share best practices, and create an action plan to start a coaching collaborative at their school for the 19-20 school year.
Laura Potter
Chris Pirie
Amy Parlette
Baltimore County Public Schools

## 6 Math, Coding, and Programming... Oh My! Connecting Coding to the Standards for Mathematical Practice!

PreK-2
Room 3158
Do you love fun and engaging math activities? You will participate in a variety of hands-on activities to develop computational thinking and introductory coding concepts. You will engage in activities that include robotics, coding apps, web-based games, and unplugged activities to help increase problem solving, number sense, and basic operations..

## Lauren Speiser

Howard County Public School System

## (1) Wait! Where are the Numbers?

PreK-5
Room 2152
Are your students number pluckers? Come learn about Numberless Word Problems and how to implement this technique into your math class.

Megan Dooley<br>Luanne Cochran<br>Charles County Public Schools

## 5- If Mathematics is a Universal Language, Why Do So Few Speak It?

## 3-8, Exhibitor Showcase

Room 2181
Discourse-driven classrooms become a reality when all students are enabled to think critically, collaborate to solve problems, critique the reasoning of others, and ultimately, own their learning with a growth mindset. This session will focus on strategies for facilitating and enhancing mathematical discussions in the classroom that will encourage students to own their learning, build a growth mindset, and develop deeper conceptual understanding.

Danielle Sullivan
Curriculum Associates

## 63 <br> Effective Questioning and Discussion Techniques

Want to increase student engagement and performance while learning to allow students to drive their own instruction? Then this session is for you! We will focus on ways to pose purposeful questions and facilitate meaningful mathematical discourse, resulting in more student-led discussions. Be prepared to have fun in this interactive session!

## Lorraine Harmer

Harmer Educational Consulting

## 64 <br> Math 1-2-3 to X-Y-Z. Explore <br> How One Strategy Builds a Cohesive Conceptual Structure Promoting Equity in the Classroom

## 3-12

Room 2169
The purpose is to engage participants in a mathematical concept through a hands-on approach that promotes inquiry, group work, and equity in a classroom. Participants will leave understanding the importance of equity and teaching using the Concrete-Representational-Abstract [CRA] learning trajectory.

## Nicole Howard

Amanda Salveron
Anne Arundel County Public Schools

## R Shearing: Not Sheep but <br> Shapes. Unpacking Geometry Coherence

6-8
Room 2170
Want to build on what students already know to help teach grade level geometry? Can shearing help your students understand the connections between figures? Can shearing help your students to visualize the Pythagorean theorem? Don't know shearing, come find out!

Stephanie Marvel
Mary Rathlev
Jonathan VerMerris
Katherine Strong
Anne Arundel County Public Schools

## R Reversing "I Do, We Do, You Do" with Technology

6-12
Room 2164
Participants will see how technology can reverse "I Do, We Do, You Do" and facilitate group work, discovery, discourse and authentic differentiation. Differentiation occurs as students discover different pathways and develop conceptual understanding that leads to procedural fluency. Laptops and tablets required for full participation. Content covered will range from Math 6 to Precalculus.

## Aaron Schwartz

Montgomery County Public Schools

## 5 Building Activities in Desmos, Part II

6-12
Room 2180
Participants will receive an introduction to the Activity Builder feature. Teachers will critique/enhance an activity and discover what makes a powerful Desmos Activity for classroom use. Participants will build their own activities within Desmos.

## Chris Wright

Brett Parker
Baltimore County Public Schools

## (1) Using Algebra Tiles... From Polynomials to Completing the Square

6-12, Exhibitor Showcase<br>Room 3156

In this session the participants will experience hands on activities in working with Algebra Tiles. The participants will leave the session with resources for lessons they can use in the classroom or intervention.

## Timothy Scripko

College Preparatory Mathematics

## 69 <br> Premeditation: A Thoughtful, Comprehensive Approach to Improving Students' MCAP Performance

## 9-12

Room 2162
We will share the process and resources we created and used over several months to prepare students (and teachers) for success on the MCAP. Components included Numeracy warm-ups, MCAP aligned warmups, a Saturday session, and four week before lessons.

## Jena Staley

Kevin Mooney
Washington County Public Schools

## 70 <br> Logarithm Properties Jigsaw

9-12
Room 2163
A "jigsaw" is used to discover properties of logarithms. In groups, students will look for patterns and construct viable arguments to create definitions of one of the log properties. Students will regroup to "Teach" their property to a new group.

## Wendy Butz

Melissa Berardelli
Harford County Public Schools

## Session VI <br> Regular Sessions <br> 1:30-2:30 pm

## $71 \begin{aligned} & \text { Changing the Stigma that Math } \\ & \text { is "Hard" }\end{aligned}$

General Interest
Room 3109
Most people have a negative conception about mathematics - why is that? In my presentation, I share the reasons and the research behind this misfortune and present ideas on changing the common perspective and outlook of math. I will present ways teachers can design positive experiences for students in mathematics to give it a better reputation with the upcoming generations.

## Courtney Herzog

McDaniel College

## 71 Let's Dispel the Myths About Women and Mathematics

General Interest

Room 3110
Now is the time to be aware of the myths surrounding women and mathematics and to address them in the classroom. Working for equitable treatment of all students as we debunk these myths requires genderspecific strategies discussed in this interactive workshop.

## Lorraine Howard

Women and Mathematics Education (WME)


# 73 <br> From Obscurity to Focus: One District's Journey in Bringing Clarity and Purpose to Data Dialogues 

General Interest
Room 3127
Explore how a local district used the implementation of a data inquiry protocol and collaborative sessions to bring focus and purpose to data dialogues and monitoring data. Participants will experience an assessment cycle, evaluate data, and engage in collaborative activities.

Karen Riley Jeffers
Donicka Herod
Regina Walters
Carlene Young
Prince George's County Public Schools

## 7 Planning and Teaching with ESOL in Mind

PreK-5
Room 3157
Techniques and strategies to plan and execute engaging and exploratory math lessons while keeping ESOL in mind. Learn ways to plan effective lessons and support all students without sacrificing exploration or engagement in your math class.

## Alexandria Basile <br> Paige Gale

Howard County Public School System

## 7 Collaborative Planning Menu: A Resource Tool

PreK-5
Room 3140
Collaborative Planning is the key to enhance both the teacher and student educational experience. But what does collaborative planning look like? Sound like? Feel like? The Collaborative Planning Menu will give you ideas and organizers that you can implement immediately.
Stephanie Layden
MaryKate McGarvie
Anne Arundel County Public Schools

## 75 Beyond Explaining an Answer: <br> Writing for a variety of purposes in the Mathematics Classroom

## PreK-5 <br> Room 3118

Writing in Mathematics needs to go further than just having students explain how they got their answer. In this session participants will learn about and explore a variety of writing purposes for the mathematics classroom.

Nicholas Pyzik
Baltimore County Public Schools

## 77 Making Sense of Number Sense Routines

PreK-5
Room 3116
You may hear people use the term number sense; but what does that mean? Join in learning how Number Sense Routines can deepen student's facility with numbers, how routines promote confidence and the flexible thinking of both students and teachers.

## Kristin Morrissey

Anne Arundel County Public Schools

## 71 Using Tiered Tasks to Foster Mathematical Proficiency in All Students

PreK-5
Room 2182
How do we create and implement tasks to build mathematical proficiency in all students? This session will introduce a tiered structure to develop real-world tasks that are aligned to standards, promote SMPs, and allow students to work at differentiated levels.

Jennifer Hilberg
Kelle Patton
Baltimore County Public Schools

## 79 <br> AA4A (Algebra Access for All)

3-12

This session will focus on equity concerns in mathematics education around access to advanced courses, entrance to college, and math-dependent careers.

Kerry Wenzel
Levi Straight
Dan Oliver
Baltimore City Public Schools

## 1 Computer Science Computational Thinking in K-8 Classrooms

K-8
Room 2172
Participants will engage in computational thinking learning experiences designed to address Maryland's K-12 Computer Science Standards. Beginning with hands-on introduction to core computer science concepts, participants will engage as students and then look at the same activities as teachers.

Paulette Shockey
Jennifer Cuddapah
Jiang Li
Christy Graybeal
Hood College

## 81 <br> Learning Mathematical Concepts Through Authentic Learning

6-12
Room 3133
This presentation explores connecting mathematical concepts and skills to purposeful, relevant, and meaningful contexts, ultimately promoting a deeper level of understanding in the classroom.

## Haitham Alkhateeb

University of Baltimore

## $9-$ Connecting the Current Topics in Mathematics Education

6-12
Room 3121
There has been a lot of information about Math Talks, Standards for Mathematical Practices, Formative Assessment, Writing in Math, etc. How are they related to middle and hich school and what can you do to move your students forward?

## Judy Werner

Slippery Rock University

## 19 Basketball Functions: Engaging <br> Students with Interactive Graphs

## 6-12

Room 3134
In this hands-on session, explore two kinds of interactive graphs: scores over time and predicted win probability from recent NBA and NCAA games. Students can learn powerful ideas about functions, graphs, and probability through this relevant and authentic task.

Robert Nedwick
Sandy Spitzer
Towson University

## P/ Coding... There IS Math Involved

6-12
Room 3119
The session will be an open/interactive discussion debunking the myth that mathematics is not necessarily needed in coding

Takhia Gaither Stuckey
Howard County Public School System

## 1) The Why and How of <br> Integrating Data Centric Lessons into Your Classroom

9-12

Room 2186
Using easy to access data sets and web-based data visualization tools will prepare students to meet the demands of a data-centric world. This session will introduce Little Apps and some supporting classroom activities, providing powerful tools to engage students with statistical concepts.

## Carol Howald

Howard Community College

## $11^{\text {Keep Calm and Coach }}$

Leaders
Room 3120
Coaches have the tall task of leading with vision, helping to maintain a positive team culture, ensuring alignment of written, taught, and assessed curriculum, and so much more. This work can be rewarding and yet it can easily overwhelm even the most organized and diligent person. During this session, we will engage in some exercises and discuss strategies to help coaches establish healthy habits that promote overall well-being and stability for themselves and thus the teachers whom they lead.

## Damitra Newsome

Robin White
Howard County Public School System

## (1) Residency - <br> It's Not Just for Doctors

## Leaders

Room 3106
In this session, participants will learn about the planning and implementation of a school support model that provides consistent, ongoing coaching to identified middle and high school mathematics programs. Baltimore County Public Schools secondary mathematics resource teachers will share how this model was developed, different modifications that were implemented, and how it evolved through meaningful feedback. Takeaways include a responsive coaching framework that uses best practices grounded in.

## Kasey Barr

Amy Morton John Fontinell
Baltimore County Public Schools



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## Dundalk High School - 1st Floor



## Dundalk High School - 2nd Floor



## Dundalk High School - 3rd Floor



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