Spring 2019
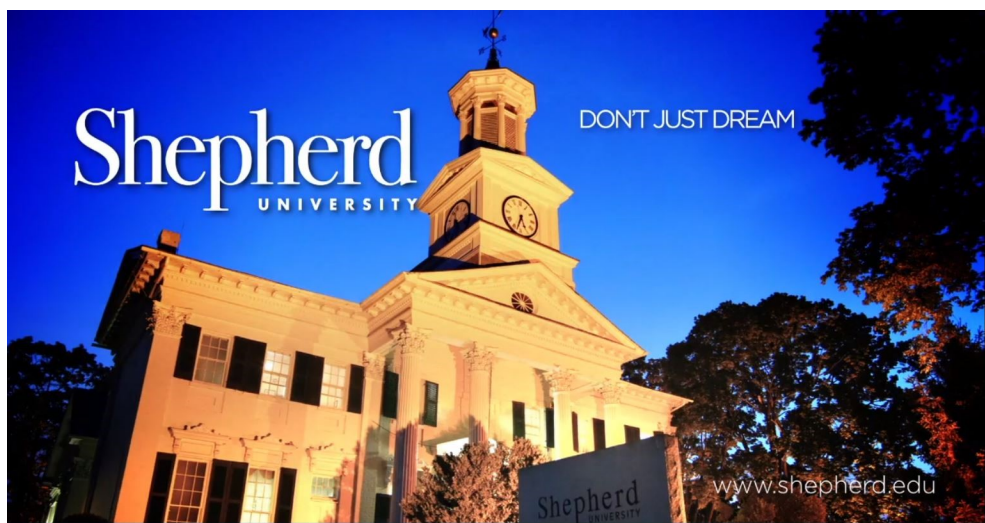
Allegheny Mountain Section of the Mathematical Association of America

Allegheny Mountain Section Newsletter

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SPRING SECTION MEETING AT SHEPHERD UNIVERSITY

The Spring 2019 Allegheny Mountain Section Meeting will be held at Shepherd University, April 5-6, in Shepherdstown, West Virginia. Our outstanding speakers this year will be Michael Pearson, Executive Director of the MAA, Margaret Robinson from Mount Holyoke College, and Gretchen Koch-Noble from the U.S. government. Their talk titles and abstracts can be found on pages 9 and 10.

Back by popular demand, there will be a free pizza dinner for students held concurrently with the banquet Friday evening. The student problem-solving competition will immediately follow the pizza dinner and a dessert reception will follow the student talks.

Our Section Business Meeting will be held Saturday morning following breakfast. The meeting is open to everyone and breakfast is a great time to catch up with friends and colleagues within our section. We hope you will consider attending.

An important change to the schedule this year is that the Section NExT workshop will be held Saturday afternoon following our last invited address. We encourage you to stay for this informative and fun venue.

One more thing! To help cover rising costs, the registration fee has been increased by $10. However, we are offering a $5 discount for early online registration. The link to our spring meeting website is: http://sections.maa.org/allegheny/annual_meeting_2019/meeting2019.php

We hope to see you in Shepherdstown!

SECTION REPRESENTATIVE TO THE MAA CONGRESS:
Pam Wovchko

Pam Wovchko of West Virginia Wesleyan College, Representative to the MAA Congress

"Do not forget that one of your MAA membership benefits is a greatly reduced rate on 'The Great Courses Plus.'"

As part of the MAA's new policies, the MAA Congress did not have any business meetings during the Joint Mathematics Meetings in January. Instead, small groups of Congress members, called CLiC's…Congress Learning Communities, have had virtual meetings. The purpose of a CLiC is to learn about a theme, communicate highlights to Congress, and then to serve as a resource on the CLiC's topic. The 7 CLiC's are: Community of K-12 Students and Teachers, Community of Students Activities and Sections, Inclusivity, Communication (MAA Publications/Talks), Reading/Listening Activities at the JMM, Teaching and Learning (and Professional Development), Mission and Membership, and Math Beyond the MAA. As a member of the Community of K-12 Students and Teachers CLiC, I am still learning about all the MAA offers to this group.

Do not forget that one of your MAA membership benefits is a greatly reduced rate on "The Great Courses Plus." When you log in to the MAA website, look on the left for "The Great Courses Plus Discount." The rate is $5.99/month with a quarterly subscription. The mathematics courses are taught by excellent instructors like Art Benjamin, Dave Kung, and James Sellers. The courses include many non-mathematics topics like history, various hobbies, and finance. While you may not have much time during the semester for non-mathematics topics, perhaps a subscription in the summer would be best.

As always, please consider giving a talk at the Spring Section Meeting. While giving a talk about mathematics or classroom activities is great, you can also give a talk about your involvement in a special MAA program, like a SIGMAA, PIC Math, StatPrep, etc. We would love to hear about your experiences.

Have a great Spring semester. I hope to see you in Shepherdstown in April.

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FROM THE CHAIR:
Tim Flowers

Greetings from cold and windy Indiana, PA. Spring will be here soon, so hopefully we'll have some great weather for our meeting April 5-6 at Shepherd University. I hope many of you are planning to attend.

This is my fourth and final letter as Chair of our section. Back in the Fall 2017 newsletter, I shared about my first experiences as a student at an MAA section meeting and challenged all of us to work on getting students to our meetings. Last spring, I reflected on my initial connection to the Allegheny Mountain Section when I was a new faculty member at IUP and encouraged all of us to reach out to our early career colleagues and invite them to a meeting. In the fall, I talked about being involved in the governance of our section and asked if there were members willing to volunteer to serve in these important and rewarding leadership positions.

All of these ideas fit into the broader picture of what the MAA is - a member-driven organization with a mission to "advance the understanding of mathematics and its impact on our world." To accomplish this, the Association needs more members, of course. But it also needs members who are involved. I've already listed how we are doing that in our local section. However, the MAA also has many other ways for members to serve. I will highlight one of these – volunteer for a role on one of the MAA's committees. They are currently collecting suggestions for committee appointments for next year's cycle. If you are interested, I would be happy to give you more information.

As you make your plans to attend the Shepherd meeting, I would like to encourage all MAA members to ensure you attend our Section Business Meeting on Saturday morning (you are welcome even if you choose not to purchase the breakfast), to hear updates from our section and the Association and to support the continued functions of the section. The rest of the meeting will have our usual program (page 8), with exciting invited speakers (pages 9,10) and opportunities for faculty to contribute talks. Friday evening will be full of student events including the problem-solving competition, talks, and a free Student Pizza Dinner. Go to our section website for more information and to register.

I will close with a personal note. When I assumed this office, I had hoped that during my term I would have the opportunity to visit some of the institutions in our section in my role as Chair. Since I was not able to accomplish this particular goal, I am going to shift it forward and make it a focus during the upcoming year. So, during my year as the Past-Chair, I am hoping to get out to speak at some of your campuses. If you have a seminar, colloquium, or Math Club that you would like for me to visit, please reach out and let me know.

Have a great semester and we'll see you in Shepherdstown.

Tim Flowers of Indiana University of Pennsylvania, Section Chair

"All of these ideas fit into the broader picture of what the MAA is - a member-driven organization with a mission to 'advance the understanding of mathematics and its impact on our world.'"

SEEKING NOMINATIONS FOR AWARD RECIPIENTS

2019 Allegheny Mountain Section Distinguished Teaching Award

The criterion for the Annual Allegheny Mountain Section Distinguished Teaching Award is a record of extraordinary success in teaching, a record of teaching effectiveness that can be documented, and an ability to foster curiosity and generate excitement about mathematics. It is preferable to have an award recipient whose teaching influence extends beyond their own institution. The nominee should be a member of the MAA, must teach at an institution within the section, and should have at least five years of teaching experience in a mathematical science.

Teaching is to be interpreted in its broadest sense, not necessarily limited to classroom teaching (it may include activities such as preparing students for mathematical competitions at the college level, for example, the Putnam Prize Competition or the Mathematical Contest in Modeling, or attracting students to become majors in a mathematical science or to become Ph.D. candidates).

Please send your nomination, with a description of how the nominee meets the criterion, by March 10, 2019 to:

Courtney Nagle, Penn State Behrend
crt12@psu.edu

2019 Allegheny Mountain Section Service Award

The criterion for the Annual Allegheny Mountain Section Service Award is a consistent record of excellence in service to the section over a period of time. In this context "service" is interpreted in a broad sense to include holding office, coordinating contests, organizing sessions, acting as a panelist, speaking at sessions, acting as the coordinating host for a meeting, or participating in any other activity that contributes to the well-being of the Section. Please send your nomination, with a description of how the nominee meets the criterion, by March 10, 2019 to:

Henry Escuadro, Juniata College
escuadro@juniata.edu

2019 Allegheny Mountain Section Mentor Award

The Mentor Award has been a part of the Allegheny Mountain Section since the year 2000. A nominee should have made significant contributions to the development of undergraduate students in mathematics as scholars. This includes, but is not limited to, encouraging student participation in MAA activities and advising students who make presentations at the Section meetings. Please send your nomination with a description of how the nominee meets the criteria, by March 10, 2019 to :

Carolyn Cuff, Westminster College
ccuff@westminster.edu

SECTION NExT REPORT
Kim Roth, Juniata College and John Tolle, Penn State DuBois

For the Spring 2019 Section NExT meeting, we are trying something new: For many years our Section NExT workshop has taken place in the early afternoon on Friday, preceding the Allegheny Mountain Section Spring Meeting. But for this upcoming April, we have scheduled the Section NExT workshop for Saturday afternoon, April 6 (beginning with lunch at 1:00), following the close of the Spring Meeting, at Shepherd University in Shepherdstown, WV. By scheduling the workshop on Saturday afternoon, we hope to accommodate junior faculty who do not wish to miss or cancel their Friday classes. We therefore encourage senior faculty to inform junior faculty in their department of the opportunity to attend the workshop in April, and remind them that attending will not disrupt their regular schedule.

Our Spring workshop, conducted by Doug Ensley of Shippensburg University, will concern the teaching of proof-writing. You will be able to sign up for the workshop on the webpage for the Spring Section Meeting (see link on page 1).

The workshop description is as follows:
The MAA Notes Volume 85 (Beyond Lecture: Resources and Pedagogical Techniques for Enhancing the Teaching of Proof-Writing Across the Curriculum) contains a wealth of resources on teaching mathematical proof writing. Our workshop format will blend presentation of select ideas from this volume and sharing of similar ideas from workshop participants. We will pay special attention to in-class, student-centered strategies and techniques, since these are easily adaptable to anyone's course.

Note: All MAA Notes volumes are free pdf downloads for MAA members, acquired by clicking Member Library after logging into the MAA.org member portal.

Doug Ensley is co-author of Discrete Mathematics: Mathematical Reasoning and Proof with Puzzles, Patterns, and Games (2005, John Wiley & Sons) and author of several articles on curriculum and pedagogy associated with discrete mathematics and teaching proof. Doug served the MAA as Deputy Executive Director from 2016 to 2018, during which time he oversaw MAA communities such as Sections, SIGMAAs, and Project NExT as well as MAA's alphabet soup of sponsored programs, including PICMath, CoMInDS, StatPREP, Progress through Calculus, NREUP, Tensor, and the Instructional Practices Guide. Doug is currently Professor of Mathematics at Shippensburg University, where he has been on the faculty since 1993.

SECTION EXECUTIVE COMMITTEE ELECTION

The following three officers will be elected during the business meeting at the 2019 Spring Section meeting at Shepherd University: Second Vice-Chair, Coordinator of Student Programs and Newsletter Editor. The nominating committee, consisting of Pam Richardson (Chair), Lyn Miller, and Tim Flowers, is pleased to present the following candidates for these positions.

Second Vice-Chair
Craig Dodge

Coordinator of Student Programs
Dan Shifflet

Newsletter Editor
Kim Jones

CANDIDATE BIOGRAPHIES

Craig Dodge, Allegheny College — Candidate for Second Vice-Chair

Craig Dodge earned his Ph.D. in Mathematics from the University at Buffalo in 2012 studying modular representations of the symmetric group. Upon completion of his graduate work he joined Allegheny College as an Assistant Professor of Mathematics. At Allegheny, Craig has been serving as the coach for the Allegheny College Putnam Exam team since 2014. During his summers he has supervised three undergraduate research projects with results including a publication in *Involve: a journal in mathematics* as well as a presentation at the Joint AMS/MAA meetings. Contributing to the learning community continues to be a priority for Craig's work. Together with other members of the Allegheny Mathematics department, Craig co-authored an open source textbook for differential and integral calculus. In order to improve his own classroom, Craig continues to be a regular attendee of Allegheny Mountain Section NExT and actively integrates new teaching practices including inquiry based learning and mastery based grading.

Dan Shifflet, Clarion University of Pennsylvania — Coordinator of Student Programs

Dan Shifflet is an Associate Professor at Clarion University of Pennsylvania. He has been an active volunteer in the Allegheny Mountain Section and attended every spring meeting since joining in 2011. For the past three years he has been the Coordinator of Student Programs and would happily do it for two more years! Dan also enjoys working with the Math Club at Clarion, telling corny jokes in class, and practicing inquiry-based learning in upper-level classes. He received his Ph.D. from Bowling Green State University in non-commutative algebra.

Kim Jones, Washington & Jefferson College — Candidate for Newsletter Editor

Kim Jones is a Senior Instructor at Washington and Jefferson College. She earned a B.A. in Mathematics and Anthropology from The Pennsylvania State University, and an M.S. in Mathematics from Virginia Commonwealth University. She joined the mathematics department at W&J in the fall of 2005. In addition to teaching, she serves as W&J's math placement coordinator. Kim has also served as the Newsletter Editor for the Allegheny Mountain Section of the MAA for the past two years.

STATISTICS EDUCATION LEADER RECOGNIZED FOR HER CONTRIBUTIONS
by Dr. Dianna J. Spence Secretary/Treasurer of the SIGMAA– Statistics Education

The Special Interest Group of the Mathematical Association of America on Statistics Education is pleased to announce that Dr. Kimberly Roth of Juniata College is the recipient of the Robert V. Hogg Award for Excellence in Teaching Introductory Statistics, presented at the 2019 Joint Mathematics Meetings in Baltimore, MD. The award recognizes Dr. Roth as an individual who exhibits both excellence and growth in teaching introductory statistics. She received her Ph.D. in Mathematics at The Pennsylvania State University in 2002 and, after four years as an Assistant Professor at Wheeling Jesuit University, joined the faculty of Juniata College in 2006, where she began teaching statistics in addition to mathematics. In 2008, she began working on a Master of Applied Statistics at Penn State; she completed this degree in 2016, the same year that she attained the rank of Professor at Juniata College. Not only has Dr. Roth applied the *Guidelines for Assessment and Instruction in Statistics Education* (GAISE) recommendations to improve the elementary statistics course at Juniata, but she has also developed additional courses in statistics and data science, mentored undergraduates in statistics through both interdisciplinary research and statistical consulting, and helped to craft a Data Science minor. She is now in the process of developing a major in Data Science. Dr. Roth is regularly an active participant in the US Conference on Teaching Statistics (USCOTS) and the Electronic Conference on Teaching Statistics (ECOTS) and is an active member and webmaster for the MAA's Statistics Education SIGMAA. Given her many accomplishments and sustained involvement in the statistics education community, we are pleased to recognize Dr. Kimberly Roth with this award in honor of the prominent statistics educator Robert V. Hogg (1924-2014).

Dr. Kimberly Roth with Dr. Carolyn Cuff of Westminster who nominated Kim for the award.

SHEPHERD MEETING SCHEDULE

ALLEGHENY MOUNTAIN SECTION
MAA Annual Meeting, April 5 & 6, 2019
Shepherd University, Shepherdstown, WV

Schedule of Events

Friday, April 5, 2019

1:30 – 2:30	Section Officer's Meeting
2:30 – 4:00	Registration
2:00 – 3:45	Book Exhibits
3:55	Welcome from Shepherd University
4:00 – 5:00	**Invited Address - Margaret Robinson, Mount Holyoke College**
	"Two Ways to Count Solutions to Polynomial Equations"
5:00 – 5:45	Registration
5:15 – 6:30	Dinner and Awards
5:30 – 6:15	Student Pizza Dinner
6:15 – 7:00	Student Problem Competition
6:45 – 9:30	Book Exhibits
7:15 – 9:10	Student Talks
9:15 – 10:00	Dessert Reception

Saturday, April 6, 2019

7:30 – 8:45	Breakfast
8:00 – 8:45	**Section Business Meeting**
8:00 – 9:00	Registration
9:00 – 10:00	**Invited Address - Michael Pearson, Executive Director, MAA**
	"Solving Problems: MAA American Mathematics Competitions and Evolving Views of Mathematics Education"
10:00 – 11:45	Book Exhibits
10:15 – 11:30	Faculty Talks
10:15 – 11:30	Career Panel for students
11:45 – 12:45	**Invited Address - Gretchen Koch-Noble, Federal Government**
	"From Biomathematics to Schedules: My Journey from a Career in Academia to Government"
12:45	Closing Remarks and Prizes

Section NExT Activities:

1:00 – 1:45	Section NExT Lunch
1:45 – 3:45	**Section NExT Workshop - Doug Ensley, Shippensburg University**

INVITED SPEAKERS: TALK TITLES & ABSTRACTS

Margaret Robinson

Title: Two Ways to Count Solutions to Polynomial Equations

Abstract: In this talk we will focus on two ways to count solutions to polynomial equations: solutions in finite fields and solutions modulo powers of a prime. For several polynomials, we will consider these cardinalities and show how for each counting method they fit together to form very similar-looking generating functions. The talk will finish with the tantalizing, sometimes frustrating, questions about how these generating functions are related to one another and to the very different-looking zeta functions of Weil and Igusa.

Michael Pearson

Title: Solving Problems: MAA American Mathematics Competitions and Evolving Views of Mathematics Education

Through its years as the American High School Mathematics Examination and now as the AMC, MAA competitions programs illustrate the evolving views of what constitutes effective mathematical problem solving, as well as identifying and cultivating mathematical talent. We'll take a leisurely tour through more than a half-century of the Association's efforts to advance mathematics through competitions, placed in the context of broader trends in mathematics education.

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Gretchen Koch-Noble

Title: From Biomathematics to Schedules: My Journey from a Career in Academia to Government

Abstract: In this talk, I will discuss how I went from creating mathematical models of cell division in E. Coli to analyzing the work schedules of air traffic controllers. I will review how my office uses mathematics to determine future staffing needs, and I will discuss how one best prepares for a job in government and industry. Bring your questions!

The opinions expressed in this talk are my own and do not represent the opinions or views of the Federal Government, the Department of Transportation, or the Federal Aviation Administration.

UPCOMING MEETING

Registration is now open!

NEW ALLEGHENY MOUNTAIN SECTION SOCIAL MEDIA ACCOUNTS

The Allegheny Mountain Section has a new presence on social media! Please follow our Twitter account (@alleghenymaa or at https://twitter.com/alleghenymaa) and our Facebook page (@alleghenymaa or at https://www.facebook.com/alleghenymaa/). Additionally, we would like everyone to use the hashtag #AlleghenyMAA for discussion about our section.

Content for reposting to our social media accounts is always welcome -- please send any ideas to our Director of E-Communications, Tom Cuchta (tcuchta@fairmontstate.edu or http://tomcuchta.com).

SECTION STUDENT NEWS

Indiana University of Pennsylvania students **Bridget Scanga**, **Jessica Jones**, and **Patrick Cone** won second prize at the *Radical Dash* competition, held in Baltimore at the Joint Mathematics Meetings in January. *Radical Dash* is a multi-day mathematical scavenger hunt and challenge for teams of under-graduates and is held each year at the JMM.

From left to right: Jessica Jones, Patrick Cone, and Bridget Scanga.

Washington & Jefferson College student **Jeremy Glasner** (Wong) gave a talk at the Joint Mathe-matics Meetings titled *Circles and Squares: A Look at Gauss's Circle Problem*.

Jeffrey Wilkinson presented a poster at the JMM titled: *A Vector Proof of de Gua's Theorem.*

Jeremy Glasner speaking at the JMM.

Two other W&J students were scheduled to give talks on Saturday at the JMM, but their sessions were cancelled due to the inclement weather. **Justin Moccaldi** (Wong): *An Ancient Chinese Problem and Two Sequences* and **Madison Lydic** (Higginbottom): *Equilibrium patterns in the candy-sharing circle.*

Fairmont State University math students, **Kristina Daniels, Brooke Fincham, Sydney Maibach,** and **Zack Linger**, are participating in an instance of the MAA-sponsored PICMath program in Spring 2019. They made two separate teams for projects: one working with a local bank and another working with Habitat for Humanity.

FSU math students **Kristina Daniels** and **Sydney Maibach** are working on a cybersecurity research project funded by a NASA IV&V SARP grant along with cybersecurity students **Caleb Lutjens** and **Ryan Stephenson**.
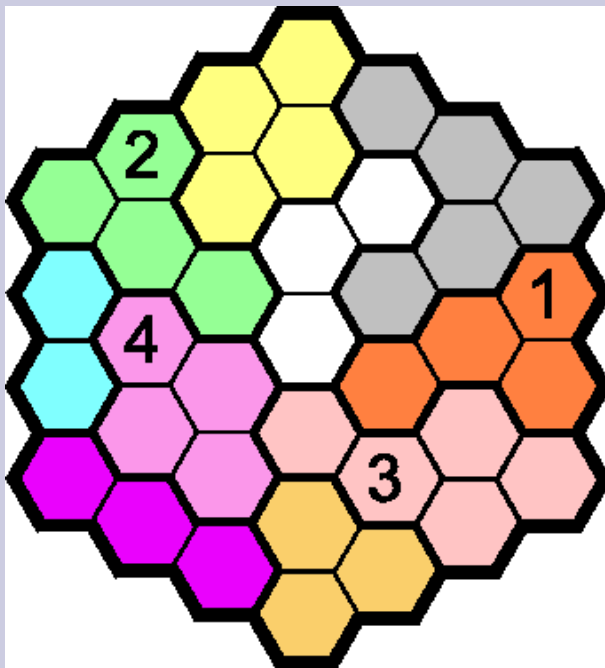
FOUND MATH

MAA Found Math Photo:
submitted by Paul Zorn

Fractal-like ice crystals found on his window at St. Olaf.

Found Math is a photo gallery of mathematical images on the MAA website.

https://www.maa.org/community/columns/maa-found-math

SPRING PUZZLE
TAKUMI

To complete the puzzle, each colored section must contain the consecutive integers from 1 to the number of cells that section contains. Also, all adjacent cells must contain different numbers.

Puzzle from http://www.sachsentext.de

Do you have any exciting news you would like to share? If so, please send it to me! We would love to hear what you and/or your students are doing within our section.

Newsletter Editor

Kim Jones

Washington & Jefferson College

kjones@washjeff.edu