2022 Colorado Mathematics Awards

*The 27th annual awards program to recognize outstanding performance
in national and international mathematics competitions and contests
by Colorado middle school, high school, and undergraduate college students.*

Thursday, May 12, 2022
4:00 – 5:30pm

Program (Online)
Preregistration is required to access the Program – click H E R E.

The program will start promptly at 4:00pm. Use the link and password from registration to log on a few minutes earlier.

3:50 – 4:00pm <u>**Connect to the program—join a breakout room to chat or wait in the main "Zoom room."**</u>

4:00 – 4:10pm <u>Welcome</u>**: Dr. Richard Gibbs**, CMA Co-Chair and Emeritus Professor of Mathematics, Ft. Lewis College

<u>**Recognition of Underwriters, Guests, and Steering Committee**</u>**: Dr. David Carlson**, CMA Co-Chair and Founder and Convener, Ethics and Ecological Economics (EEE) Forum

4:10 – 4:30pm <u>Guest Presentation</u>**: Dr. Mike Jacobson**, Professor, Mathematical and Statistical Sciences, University of Colorado Denver, and past Chair, Mathematical Association of America, Rocky Mountain Section -- *Paul Erdős: Was he: "The man who loved only numbers"?*

4:35 – 5:25pm <u>**Presentation of Awards by CMA Steering Committee members**</u>**:**

- **MATHCOUNTS:** presented by **Mr. Paul Gulman**, P.E., National Society of Professional Engineers of Colorado

- **American Mathematics Competitions 8:** presented by **Ms. Silva Chang**, Department of Applied Math, University of Colorado Boulder; Director, Colorado Math Circle, and AMC 8 co-Editor-in-Chief

- **American Mathematics Competitions 10:** presented by **Ms. Rhonda Naylor**, Campus Middle School (retired) and Past President, Colorado Council of Teachers of Mathematics

- **American Mathematics Competitions 12**: presented by **Mr. Rocke Verser**, independent computer consultant

- **AMC Young Women in Mathematics Certificate Program:** presented by **Ms. Naylor**

- **U.S.A. Junior Mathematics Olympiad and U.S.A. Mathematics Olympiad:** presented by **Ms. Chang**

- **American Regions Mathematics League Colorado Team 1:** presented by **Ms. Chang**

5:25 – 5:30pm <u>Closing Remarks</u>**: Dr. Gibbs** and **Dr. Carlson,** CMA Co-Chairs

*Our deep thanks to CMA Steering Committee member, **Dr. Raymond Johnson,** Mathematics Content Specialist, Colorado Department of Education, for being our "Zoom engineer" for the day!*

MATHCOUNTS

MATHCOUNTS is an afterschool program for 6th, 7th, and 8th graders which leads to a series of three-hour competitions at school, chapter, state, and national levels. Each year, approximately 140,000 students nationwide participate in school MATHCOUNTS competitions, with about 40,000 students participating at chapter competitions. Due to COVID-19 protocols, competition participation and attendance was limited this year. The state competition was held in-person at the University of Denver on March 12th and did not include team competitions. Top finishers are listed in ranked order, as are the next six Honorable Mention students. This year's Winning Coach was determined by the number of top four finishers coached.

The top four finishers represented Colorado at the MATHCOUNTS National Competition held May 7-9 in Washington, D.C. Shruti Arun finished in 10th place (of 224) at the end of the written rounds and participated in the Countdown Round. The Colorado Team finished in 21st place (out of 56 teams).

Top Colorado MATHCOUNTS Finishers (and Coaches)
(1)   **Joshua Liu**, Challenge School, Denver (Matt Bixby and Silva Chang)
(2)   **Shruti Arun**, Campus Middle School, Greenwood Village (Christy Marini)
(3)   **Alex Zhang**, The Manning School of Academics and Arts, Golden (Cheri Cahill)
(4)   **Naomi Huang**, Campus Middle School, Greenwood Village (Christy Marini)
Winning Coach: **Christy Marini**, Campus Middle School, Greenwood Village

Honorable Mention (and Coaches)
Tanush Shekhar, Peak to Peak Charter School, Lafayette (Anita Chakraborty-Spotts); **Grayson Manuel**, Slavens K-8, Denver (Kirk Framke); **Audrey Haas**, Homeschool, Parker (Jennifer Haas and Silva Chang); **Jackson Creason**, Timberview Middle School, Colorado Springs (Barry Schneiderman); **Eric Bliss,** Westlake Middle School**,** Broomfield (Caroline Flowers); and **Jonah Wang**, Hulstrom K-8, Northglenn (Angela Newberry)

American Mathematics Competition 8

The AMC 8 is a 40-minute 25-question multiple-choice exam that was given on January 18, 2022. Students in 8th grade and below are eligible. Nationally, 70,512 students from 1,742 schools nationwide participated.

AMC 8—Honor Roll School and Coach
Shruti Arun, Anirudh Gadepalli, Naomi Huang, and **Rohith Thomas**
Campus Middle School, Greenwood Village (Christy Marini)

AMC 8--Top Colorado Individual Winners (and Coaches)
(1)   **Shruti Arun**, Campus Middle School, Greenwood Village (Christy Marini and Silva Chang)
(1)   **Joshua Liu**, Challenge School, Denver (Matt Bixby and Silva Chang)
(3)   **Rohith Thomas**, Campus Middle School, Greenwood Village (Christy Marini)

6th Grade First Place: **Osel Yeh,** Summit Middle School**,** Boulder (Maryam Yekta), and **Derek Yin,** Altona Middle School, Longmont (Tim Criger)

Honorable Mention (and Coaches)
A. Chang, Academy School District 20, Colorado Springs; **Paxton Dabasinskas**, Challenge School, Denver (Matt Bixby); **Anirudh Gadepalli**, Campus Middle School, Greenwood Village (Christy Marini); **Audrey Haas**, Homeschool, Parker (Jennifer Haas and Silva Chang); **Kiran Herz**, Challenge School, Denver (Matt Bixby); **Naomi Huang**, Campus Middle School, Greenwood Village (Christy Marini); **Liam Nevin**, Kinard Core Knowledge School, Ft. Collins (Cecilia Bonnertz); **Jonah Wang**, Hulstrom K-8, Northglenn (Angela Newberry); **Alex Zhang**, The Manning School of Academics and Arts, Golden (Cheri Cahill); and **Sophie Zhou**, Cheyenne Mountain Junior High School, Colorado Springs (Angel Powers)

American Mathematics Competitions 10 and 12

Each contest is a 75-minute 25-question multiple-choice test with approximately 12 common problems between them. Students in grades 10 and below are eligible for the AMC 10 exam; students in grades 12 and below are eligible for the AMC 12 exam. Each contest was administered in different versions in 2021 on Nov. 10th [10/12A] and Nov. 16th [10/12B]. The AMC 10A and 10B exams were taken by 54,917 students from 3,021 schools; students who took both exams are counted twice. The 12A and 12B exams were taken by 39,989 students from 2,923 schools; students who took both exams are counted twice.

American Mathematics Competitions 10 and 12 (continued)

AMC 10--Top Colorado Individual Winners (and Coaches)
(1)   **Srinivas Arun**, Cherry Creek High School, Greenwood Village (Jim Padavic)
(2)   **Ruoxi Hu**, The Vanguard School, Colorado Springs (Vic Dallin)
(3)   **Jackson Dryg**, Fossil Ridge High School, Ft. Collins (Silva Chang and Todd Pfeifer)

8th Grade First Place: **Shruti Arun**, Campus Middle School, Greenwood Village (Jim Padavic and Silva Chang)

AMC 10--Honorable Mention (and Coaches)
Shruti Arun, Campus Middle School, Greenwood Village (Jim Padavic and Silva Chang); **Connor Frithsen**, Steamboat Springs High School (Sally and Shane Lambert); **Jacob Greene**, Stargate School, Thornton (Paul Rightmyer); **Shourya Hooda**, Cherry Creek High School, Greenwood Village (Jim Padavic); **Abhinav Krishna,** Cherry Creek High School, Greenwood Village (Jim Padavic); **Joshua Liu**, Challenge School, Denver (Matt Bixby and Silva Chang); **Toby Shu**, Cherry Creek High School, Greenwood Village (Jim Padavic); **Davin Yin**, Fairview High School (Dominique Youngren); and **Kelly Young**, Fairview High School, Boulder (Dominique Youngren)

AMC 12—Merit Roll Team (and Coach)
Anthony Chui, **Anthony Wang**, and **Max Xu**, Rock Canyon High School, Highlands Ranch (Karen Bukowski)

AMC 12--Top Colorado Individual Winners (and Coaches)
(1)   **Max Xu**, Rock Canyon High School, Highlands Ranch (Silva Chang and Karen Bukowski)
(2)   **Srinivas Arun**, Cherry Creek High School, Greenwood Village (Jim Padavic and Silva Chang)
(3)   **Anthony Chui**, Rock Canyon High School, Highlands Ranch (Karen Bukowski)
(3)   **Pavan Gudavalli**, Fairview High School, Boulder (Dominique Youngren and Silva Chang)

10th Grade First Place: **Srinivas Arun**, Cherry Creek High School, Greenwood Village (Jim Padavic and Silva Chang)

AMC 12—Honorable Mention (and Coaches)

Ellie Greyson, Cherry Creek High School, Greenwood Village (Jim Padavic and Silva Chang); **Jeremy Huang**, Stargate School, Thornton (Silva Chang); **Anthony Wang**, Rock Canyon High School, Highlands Ranch (Karen Bukowski and Silva Chang); **Ari Wang**, Rampart High School, Colorado Springs (Silva Chang and Ming Song); **Emily Zhang**, Cherry Creek High School, Greenwood Village (Ming Song, Jim Padavic, and Silva Chang); and **Richard Zhou,** Fairview High School, Boulder (Silva Chang)

AMC Young Women in Mathematics Certificate Program

The American Mathematics Competition's Young Women in Mathematics Awards and Certificate Program honors the top-performing female students on the AMC 8, 10A, 10B, 12A, and 12B. The top 5 scorers in each competition nationwide split a $5,000 scholarship, and the top 5 scorers from each MAA Section in each competition receive certificates. These are the Certificate winners from the Rocky Mountain Section of the MAA; for students not already listed in this printed program, schools are included.

AMC 8: **Allison Duan** (Southern Hills Middle School), **Audrey Haas**, **Naomi Huang**, **Sabrina Xu** (Rocky Heights Middle School), and **Sophie Zhou**

AMC 10A/10B**: Shruti Arun, Nehal Choudhary** (Rock Canyon High School**), Ruoxi Hu, Emma Russell** (Steamboat Springs Middle School), **Alicia Tan** (Rock Canyon High School), **Pei Xiao (Mia) Wu** (D'Evelyn Junior/Senior High School), **Valerie Xin** (Stargate School), **Kelly Yang** (Fairview High School), and **Kelly Young**

AMC 12A/12B: **Sophia Adams (**Grandview High School), **Ellie Greyson, Ruoxi Hu, Tanishqa Puhan** (Cherry Creek High School), **Maya Vendhan**, and **Emily Zhang**

American Invitational Mathematics Examination (AIME) and the USA Math Olympiads

The *American Invitational Mathematics Examination* is a 3-hour, 15-question examination with each answer a 3-digit number. Two versions of the exam were administered on different days to students achieving Honor Roll status on the AMC 10 or 12 exams. The AIME I and II exams were given this year on February 8th and 16th. This year, 4,600 students nationwide participated in AIME I.

The *USA Mathematical Olympiad* and the *USA Junior Mathematical Olympiad* are 9-hour 6-question essay examinations given to the top students participating in the AMC 10 and 12 exams and the AIME. Nationally, 348 students were invited to take the USAMO exam, including one student from Colorado; and 306 students qualified for the USAJMO exam, including one from Colorado. (The total of 654 students taking one of these Math Olympiad exams is less than 1% of the total number of students nationally who took the AMC exams.) These Math Olympiad exams were given on March 22-23. Both Colorado students have been invited to the prestigious *Mathematical Olympiad Summer Program,* an intensive program to select and train the six members of the U.S. team for the *International Mathematical Olympiad* to be held in Oslo, Norway in July.

USA Math Olympiad Qualifier: **Srinivas Arun,** Cherry Creek High School, Greenwood Village (Jim Padavic and Silva Chang)   ****Srinivas, a sophomore, received a Bronze Award!**

USA Junior Math Olympiad Qualifiers**: Ethan Lou,** freshman at Cherry Creek High School (Jim Padavic), and **Jackson Dryg**, sophomore at Fossil Ridge High School, Ft. Collins (Silva Chang) ****Jackson was named a Winner of the USAJMO!**

American Regions Mathematics League Team 1

Each year about 2000 high school students from the U.S. and other countries form 15-member teams to compete at the national ARML competition. In June 2021, 39 students from 17 different schools represented Colorado at the national competition. **Colorado finished in 1st place nationally in the B Division** and placed 13th overall. **Srinivas Arun** of Cherry Creek HS was one of only 6 U.S. participants to receive a perfect score in the Individual Round. This year's team members are listed below:

> **Shruti Arun**, Campus Middle School, Greenwood Village; **Srinivas Arun**, **Ellie Greyson**, **Abhinav Krishna,** and **Ethan Lou**, Cherry Creek High School, Greenwood Village; **Jackson Dryg**, Fossil Ridge High School, Ft. Collins; **Pavan Gudavalli, Hannah Wang**, **Kelly Young,** and **Richard Zhou**, Fairview High School, Boulder; **Jeremy Huang**, Stargate School, Thornton; **Maya Vendhan**, Colorado Academy, Denver; **Anthony Wang** and **Max Xu**, Rock Canyon High School, Highlands Ranch; and **Ari Wang**, Rampart High School, Colorado Springs

> Team Coach: Silva Chang, Department of Applied Math, University of Colorado Boulder; Director, Colorado Math Circle, and AMC 8 co-Editor-in-Chief

To see current and past test problems for these competitions, visit these websites:
- *https://www.mathcounts.org/programs/competition-series/past-competitions (MATHCOUNTS)*
- *https://artofproblemsolving.com/wiki/index.php/AMC_Problems_and_Solutions*
     (AMC 8, 10, 12; AIME, USAJMO & USAMO)
- *https://www.arml.com/ARML/arml_2019/page/index.php (ARML)*

Special thanks to two friends of the Colorado Mathematics Awards!

Dr. David Larue, a former CMA Steering Committee member, and the McGraw-Hill Foundation for generously underwriting Colorado Mathematics Awards for several years.

Dr. George Berzsenyi, professor emeritus at Rose-Hulman Institute of Technology, for generously donating several copies of his RECENT book, "The Competition Corner in the *Mathematics Student*." The Competition Corner was the Problem Section of the former *Mathematics Student* journal of the National Council of Teachers of Mathematics in 1978-81. This book presents the problem sets of the Competition Corner along with multiple solutions by the contestants. Each student and coach recognized herein will receive a complimentary copy next month!

Contributions and other expressions of support for the Colorado Mathematics Awards (CMA) annual event may be sent to: FLC Foundation, 1000 Rim Drive, Durango CO 81301-3911. Please write CO Math Awards on the memo line.

Pictures of students and teacher-coaches from past years may be viewed at cma.coloradomath.org.