

2019 PROGRAM



2019 FESTIVAL ORGANIZERS



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2019 FESTIVAL SPONSORS



Alfred P. Sloan
FOUNDATION



ACCESSIBILITY

For Festival guests with hearing disabilities, a limited number of assistive listening devices are available on a first come, first serve basis in the 2019 Festival lecture rooms with more than 50 guests. ASL interpreters are available on a first come, first serve "on call" basis during the event, as well as present at a select number of Festival events. See Pages 4 and 5.

For Festival guests with vision disabilities, large format print and braille schedules are available on request at Festival information booths.



Welcome to the National Math Festival — we are so glad you are here!

This schedule is organized with the same information displayed in several different ways, to make it easier to find what you're looking for.

Feel free to engage with Festival staff, and stop by our Information Booths for additional National Math Festival resources and information.



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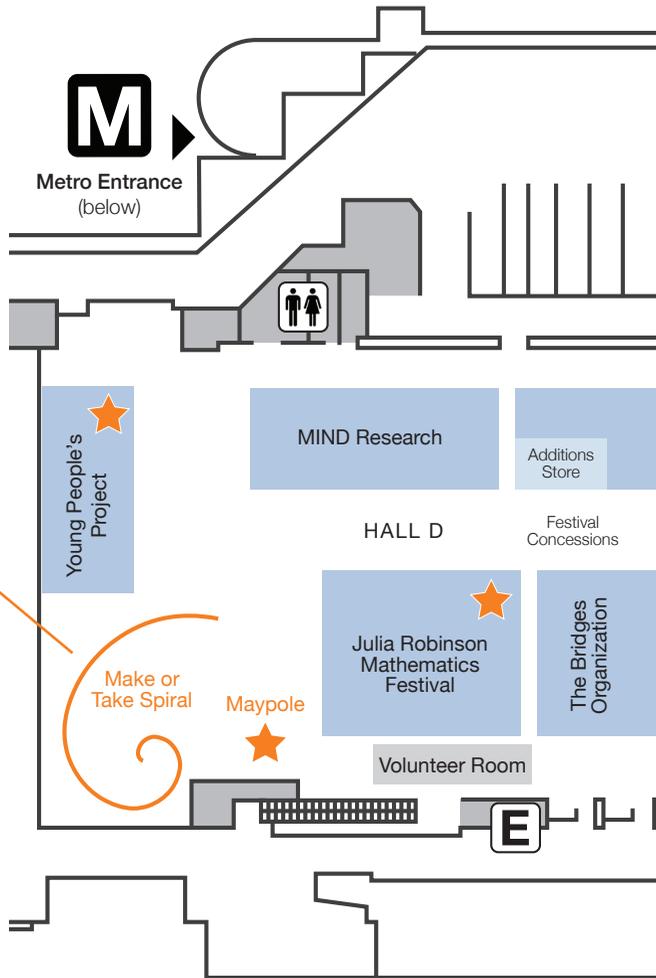
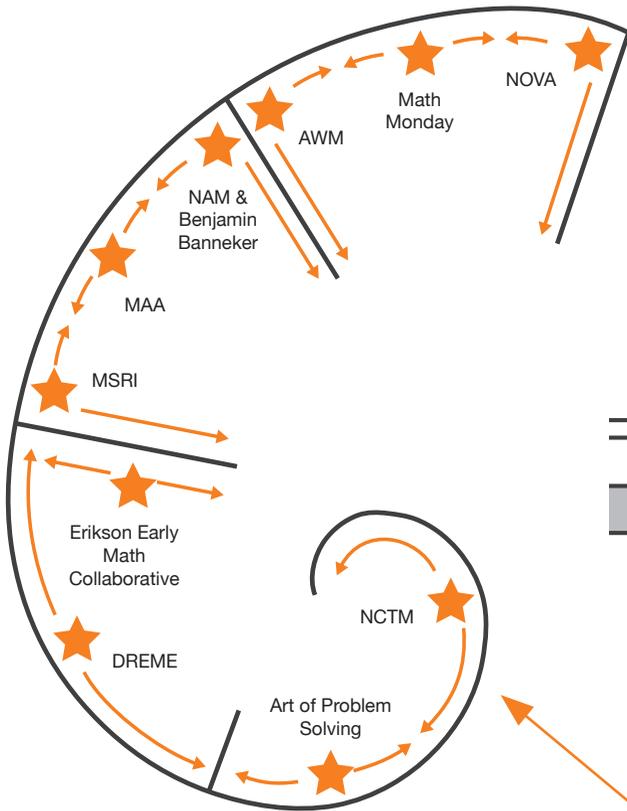
FESTIVAL INFORMATION

By entering the National Math Festival, you consent to having your image captured by official photographers and videographers. The resulting materials, including still photographs, video and audio recordings may be used by the Mathematical Sciences Research Institute (www.msri.org) without restriction or financial compensation, in news materials, promotional materials, on the web and other properties. If you do not agree to having your image captured or recorded please do not enter the event venue.

The National Math Festival is dedicated to a welcoming, harassment-free festival experience for everyone. Our full anti-harassment policy can be found at: nationalmathfestival.org/welcoming-statement/

FESTIVAL MAP

NATIONAL MATH FESTIVAL MAP KEY			
	Major Activity Presenters		Alfred P. Sloan Foundation Film Room
	Make or Take Activities		Presentations
	Board Games Galore		Dance of the Diagram
	Mathical Author Readings		Mathical Reading Room & Coloring Corner
	Medical/Security Office		Elevators
			Restrooms
			First Aid

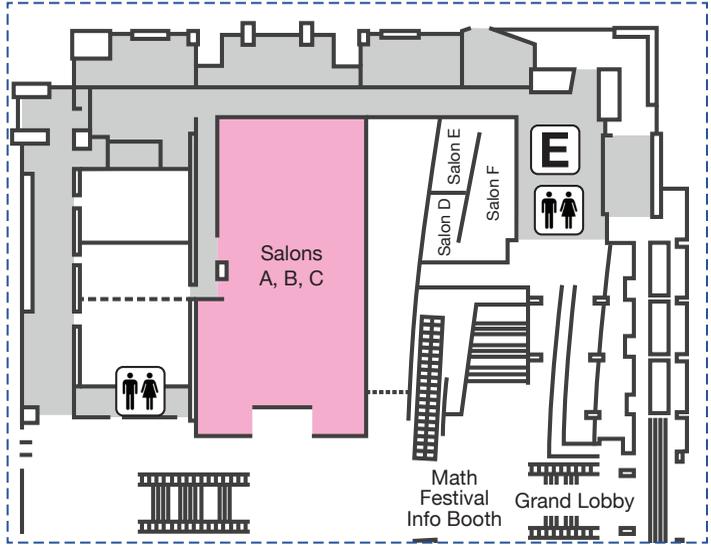


Across the L Street Bridge you'll find Films, Presentations, and much more!

LEVEL 2

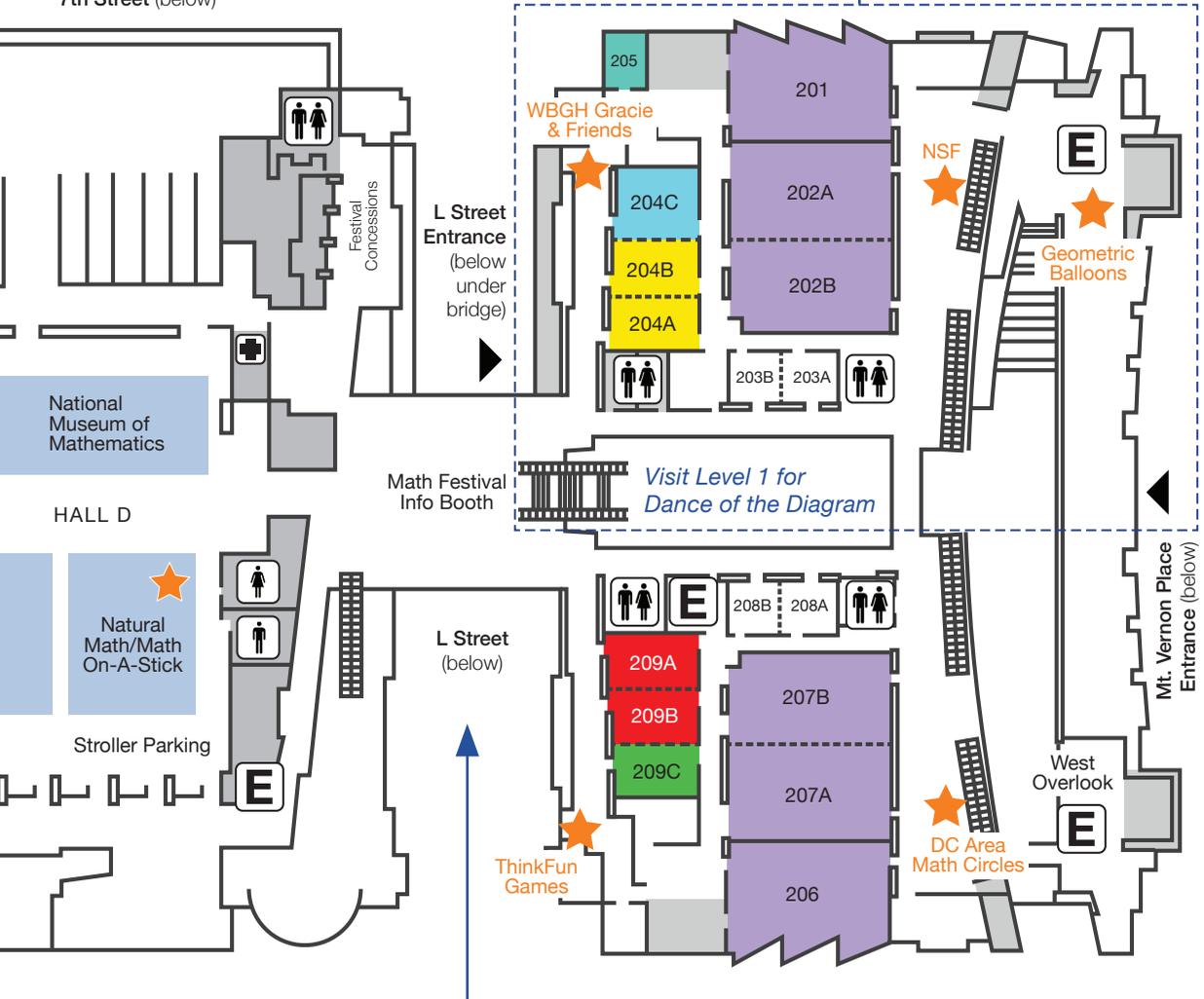
9th Street (below)

**LEVEL 1
(Street Level)**



*Visit Level 1 for
Dance of the Diagram*

7th Street (below)



FESTIVAL SCHEDULE AT A GLANCE

Room	10:00AM	10:15AM	10:30AM	10:45AM	11:00AM	11:15AM	11:30AM	11:45AM	12:00PM	12:15PM	12:30PM	12:45PM
201		How Many Degrees in a Martian Circle? — Dr. James Tanton					Math, Music, History — Dr. Lillian Pierce					
202a		Math and Your Love Life — Dr. Annie Raymond					The Mathematics of Social Choice — Dr. Emily Riehl					
202b		Impromptu Magic & Math — Mark Mitton					Mathematics for Human Flourishing — Dr. Francis Su					
204ab	Mathical Reading Room & Coloring Corner											
204c		Mathical Author Reading PreK					Mathical Author Reading Grades K–2					
206		Safety Goggles Not Required — Dr. Suzanne Weekes					Cryptography — Dr. Avi Wigderson					
207a		Math and the Movies — Dr. Joseph Teran					The Creativity Code — Dr. Marcus du Sautoy					
207b		Data Did That! — Dr. Amelia Taylor					Math, Ice Cores, and Planet Earth — Dr. Mary Lou Zeeman					
209ab		The Physics of Football			The Mathematical Games of Numberphile			“Chasing Patterns”			NOVA: Prediction by the Numbers	
209c	Board Games Galore											
Hall D	Wonder-ful Math with MoMath*, Julia Robinson Mathematics Festival, Flagway™ Games and Tournament, MathMINDs Games*, Math-Art Exhibit and Platonic Paper Folding, Natural Math and Math On-A-Stick, Make or Take Spiral, Additions Shop											
Various	Make or Take Spiral — Outposts											
Salons A,B,C Level 1												

*ASL interpretation will be provided for Wonder-ful Math with MoMath from 10am–11am, and ASL interpretation will be provided for MathMINDs Games from 11am–12pm.

NATIONAL MATH FESTIVAL CATEGORY KEY

 Major Activity Presenters	 Alfred P. Sloan Foundation Film Room	 Mathical Author Readings
 Make or Take Activities	 Presentations	 Mathical Reading Room & Coloring Corner
 Board Games Galore	 Dance of the Diagram	 ASL Interpretation Will Be Provided

1:00PM	1:15PM	1:30PM	1:45PM	2:00PM	2:15PM	2:30PM	2:45PM	3:00PM	3:15PM	3:30PM	3:45PM
The Power of Primes — Dr. Holly Krieger				 Mathematics for Human Flourishing — Dr. Francis Su				A Fine Art of Problem Solving — Nancy Scherich			
Math and the Movies — Dr. Joseph Teran				Safety Goggles Not Required — Dr. Suzanne Weekes				The Geometry of Chess — John Urschel			
A Fine Art of Problem Solving — Nancy Scherich				The Creativity Code — Dr. Marcus du Sautoy				The Mathematics of Social Choice — Dr. Emily Riehl			
Mathical Reading Room & Coloring Corner											
Mathical Author Reading Grades 3–5				Mathical Author Reading Grades 6–8				Mathical Author Reading Grades 9–12			
Math and Your Love Life — Dr. Annie Raymond				How Many Degrees in a Martian Circle? — Dr. James Tanton				Math, Music, History — Dr. Lillian Pierce			
The Geometry of Chess — John Urschel				Data Did That! — Dr. Amelia Taylor				 Impromptu Magic & Math — Mark Mitton			
Math, Ice Cores, and Planet Earth — Dr. Mary Lou Zeeman				Cryptography — Dr. Avi Wigderson				The Power of Primes — Dr. Holly Krieger			
	NSF “We are Mathematics” Contest Winners			“Navajo Math Circles” and Other MSRI Films			Movie Animation in “Moana” and “Frozen”				
Board Games Galore											
Wonder-ful Math with MoMath, Julia Robinson Mathematics Festival, Flagway™ Games and Tournament, MathMINDs Games, Math-Art Exhibit and Platonic Paper Folding, Natural Math and Math On-A-Stick, Make or Take Spiral, Additions Shop											
Make or Take Spiral — Outposts											
				Dance of the Diagram — The BARKIN/SELISSEN PROJECT							



For Festival guests with hearing disabilities, a limited number of assistive listening devices are available on a first come, first serve basis in Festival lecture rooms with more than 50 guests. ASL interpreters are available on a first come, first serve “on call” basis during the event, as well as present at a select number of Festival events shown above.

2-4
5-7
8-10
11-13
14-18
18+

Recommended
Age Groups

ALL-DAY EVENTS

Major Activity Presenters – Hall D



Presenter:
National Museum of
Mathematics (MoMath)
Location: Hall D

Wonder-ful Math with MoMath!

Want to slice shapes with lasers, explore giant mazes, crank up the math tunes, or design a roller coaster? Then don't miss MoMath at the National Math Festival!



ASL interpretation provided from 10am–11am.



Presenter:
Julia Robinson
Mathematics Festival
Location: Hall D

The Julia Robinson Mathematics Festival

The Julia Robinson Mathematics Festival: The same mathematics that carried us to the moon, that gave us the internet, that has advanced genetics — this same mathematics can keep you engaged, charmed, excited for hours.



Presenter:
The Bridges Organization
Location: Hall D

Math-Art Exhibit and Platonic Paper Folding

Who knew math could be so inspirational, or patterns so beautiful? Come be surprised by the way artists use math, and mathematicians use art, to make a statement about the universe.



Presenter:
The Young People's
Project
Location: Hall D

Flagway™ Games and Flagway™ Tournament

Math with your sneakers on! Play a pickup game of Flagway™, and cheer your favorite hometown team in the National Flagway™ Tournament. Meet Math Literacy Workers, students who train their peers (and you!) in the math skills to help everyone shine in this fun, exciting team sport.



Presenter:
MIND Research Institute
Location: Hall D

MathMINDs Games: South of the Sahara

MathMINDs Games: South of the Sahara gives students, teachers, and families a completely new way to engage with math. Each story brings together historical facts, ancient gameplay, mathematics, and the world around us to create a highly connected experience. **Games may be played in either English or Spanish.**



ASL interpretation provided from 11am–12pm.

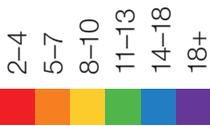


Presenter:
Natural Math/
Math On-A-Stick
Location: Hall D

Natural Math/Math On-A-Stick

Make patterns, tile turtles, count, spiral, and play your way to mathy delight! Aimed for children ages 2–5, activities also engage the minds of teens and adults. If a small child can be inspired by our geometry, calculus, topology, and more (and they can!), then everyone can.





Recommended
Age Groups

ALL-DAY EVENTS

Major Activity Presenters – Hall D



Presenter:
National Museum of
Mathematics (MoMath)
Location: Hall D

Additions, the Shop at MoMath & Author Signings

Additions, the shop at MoMath, returns to provide Festival-goers with even more mathy goodies, author book signings, and souvenirs for the entire family.



Activities – Beyond Hall D



Presenter:
Alfred P. Sloan Foundation
Location: Room 209ab

Alfred P. Sloan Foundation Film Room

Come to the movies! Check out these intriguing interactive presentations. **See the complete Alfred P. Sloan Film Room schedule on Pages 12–13.**



Presenter:
Mathematical Science
Research Institute
Location: Room 209c

Board Games Galore

Bring your own, or join a game in play. There are many excellent mathematically fascinating board games. What's your favorite today?



Presenter:
Mathematical Sciences
Research Institute
Location: Room 204c

Mathical Author Readings

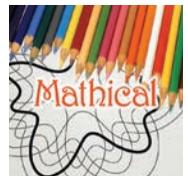
Join us for five fantastic book readings, spanning ages 2–18! A lost dragon, a bedroom full of smelly sheep, billions of stars, middle school machinations, and some really, really big numbers await. (Get the Mathical list: mathicalbooks.org.)



Presenter:
Mathematical Sciences
Research Institute
Location: Room 204ab

Mathical Reading Room & Coloring Corner

Curl up with a good book — or do some coloring! All ages are welcome in the Mathical Reading Room & Coloring Corner. Comfy furniture, good books, mathematical patterns to color, and washable markers are provided.



Presenter:
Mathematical Sciences
Research Institute
Location: Various
*Refer to Map on
Pages 2–3*

Make or Take Spiral

Take the Festival home with you. Pick up resources about local and national clubs, books, games, and activities — or get your hands on some mathy take-home projects! Come enjoy 20+ stations scattered throughout the Festival. Educators and family groups are especially welcome. **See the Make or Take Spiral section of this booklet for more details, Pages 8–11.**

ALL-DAY EVENTS

Make or Take Spiral



Presenter:
AoPS Academy
Location: Hall D

Art of Problem Solving

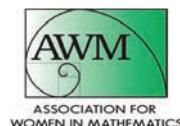
Explore the mathematical mystery of the Moebius Strip! Come make your own strip and take a list of exciting Moebius Strip activities to do with your friends or classmates back home. Also, don't miss your chance to explore the some of the intriguing math resources designed by the Art of Problem Solving.



Presenter:
Association for Women
in Mathematics (AWM)
Location: Hall D

Association for Women in Mathematics (AWM)

Come get information about how we can support your budding mathematician, and learn some cool math! AWM works to change the narrative around mathematics, making sure there is a place for everyone at the table.



Presenter:
Benjamin Banneker
Association and National
Association of
Mathematicians
Location: Hall D

Benjamin Banneker Association and National Association of Mathematicians (NAM)

Learn about the African American contribution to mathematics with hands-on activities. Create parts of 17th century surveyor, naturalist, and farmer Benjamin Banneker's Almanac and share your creations via photos on the BBA and NAM web sites.



Presenter:
DC Area Math Circles
Location:
Across from Room 207a
Refer to Map on Page 3

DC Area Math Circles

Open to students in Maryland, DC, and northern Virginia, the **Chesapeake Math Program** spans opportunities from elementary through high school. Students from public, private, and charter schools are welcome. Learn more about the group, as well as about other fun and useful math opportunities including Math Counts, and local tutoring resources.



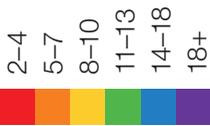
The **DC Math Circle**, directed by American University faculty, is on the informal side of things, avoiding traditional classroom formats, examinations, and preparation for competitions in favor of fun and the richness of mathematical discovery. Our program, for 5th through 8th graders, features weekly evening lessons by a variety of in-house instructors and special guest speakers.



Origami activities will explore small, intriguing constructions for students to build and take. These will be appropriate for a large range of students as there are simpler and more complex objects to create. We welcome teachers also. The **Fairfax Math Circle** is open to middle and high school students; see www.fairfax-mathcircle.org for more details.



Description continues on next page



Recommended
Age Groups

ALL-DAY EVENTS

Make or Take Spiral

Come make a hexaflexagon! Hexaflexagons are wonderful tactile paper toys that flex to transition between colorful states, and lead to interesting mathematical puzzles. This activity is appropriate for adults, teachers, and kids age 10 and up. The **Southern Maryland Math Circle** meets at the Lexington Park Library with fun math activities for middle school and high school students and their parents.



Presenter:
DREME Network
Location: Hall D

DREME Network

Stop by and visit the DREME Network to practice loving math with your toddler!



1) Intentionality Bowl: Parents gain experience with seizing opportunities to engage in math during everyday routines and activities. **2) Doing Math the Mayan Way:** Parents will help children recognize, count, or perform operations using the Mayan numeric system. They will leave with an appreciation of the Mayan culture whose people invented the number 0 and developed an intricate mathematical system, and with a simple fun learning activity that they could do easily do at home with their children using everyday objects. **3) Storybook Activities:** Parents and children will play activities (based on content from storybooks) that help them practice their math skills. **4) Exploring Math With Paper: Fold Math Into Your Day:** Families will engage in spatial thinking and language through origami and making symmetrical designs by folding paper. **5) Card Games:** Families will learn some math games they can play with a simple deck of playing cards. We will also have materials from our cooking and math project available. **6) General Information and Resources:** This table will serve as an introduction to our work, an opportunity to sign up for our mailing list, and to take some resources designed for teachers.



The DREME Network includes early childhood departments at Boston College, Columbia University Teachers College, New York University, San Francisco State University, the University of Chicago, the University of Minnesota, and the University of Wisconsin. Funding for the DREME Network is provided by the Heising-Simons Foundation.



Presenter:
Erikson Institute
Early Math Collaborative
Location: Hall D

Erikson Institute Early Math Collaborative

Come see how simple-to-make dot cards can be used in games to promote early number sense. Make a set to take and play with the preschooler/kindergartener in your life. We'll have video examples and handouts for teachers and parents.



2-4
5-7
8-10
11-13
14-18
18+

Recommended
Age Groups

ALL-DAY EVENTS

Make or Take Spiral



Presenter: Ithaca College
Location:
Upstairs from Mt. Vernon
Place Entrance
Refer to Map on Page 3

Geometric Balloon Bending

Everybody loves balloons — and Geometric Balloon Bending!
Come enjoy learning more about Platonic solids, including cubes
and tetrahedrons...and wear one home with you!



Presenter:
Julia Robinson
Mathematics Festival
Location: Hall D

Julia Robinson Mathematics Festival

Take home puzzle booklets and other game-based resources for
all ages and levels of challenge!



Presenter: Math Monday
Location: Hall D

Math Monday

Want to make math games a weekly club or lunchtime event at
your school? Come meet Scott Kim and check out his online
resources for starting a Math Monday club at your school.



Presenter:
Mathematical Association
of America (MAA)
Location: Hall D

Mathematical Association of America (MAA)

Stop by to learn about the MAA American Mathematics Compe-
titions (AMC) and the first place US International Mathematical
Olympiad team. Teachers, check out our Curriculum Inspirations.
Activities are aimed at middle school and high school. Learn more
at maa.org/amc.



Presenter:
Mathematical Sciences
Research Institute (MSRI)
Location: Hall D

Mathematical Sciences Research Institute (MSRI)

Try your hand at Super-Cube Shuffle and Factor Forts, learn
about Crazy 8's Math Clubs, take home Math at Home booklets
from the California Math Council, and learn about MSRI's Public
Understanding of Math programs: face to face, online, books,
movies, and more! msri.org/public



Presenter:
Nancy Scherich
Location: Hall D

Maypole Math Activity

Join mathematician and winner of the Dance Your Ph.D.
contest Nancy Scherich for a Math Maypole. See how math
and dance can interweave...with you! **To dance and help
create the Math Maypole, arrive at 10am!**



2-4
5-7
8-10
11-13
14-18
18+

Recommended
Age Groups

ALL-DAY EVENTS

Make or Take Spiral



Presenter: National Council of Teachers of Mathematics (NCTM)

Location: Hall D

National Council of Teachers of Mathematics (NCTM)



What do bears in a boat have to do with mathematics? Come see the National Council of Teachers of Mathematics to find out. If you teach math, you'll love NCTM!



Presenter: Natural Math

Location: Hall D

Natural Math



You've heard about hands-on math. Now get ready for math on your hands! Model the hardest quarter of the times tables, from 6x6 to 10x10, using your fingers and this early algebra trick even a five-year-old can learn.



Presenter: NOVA

Location: Hall D

NOVA Education



Experience the latest in science games, interactives, and immersive virtual reality in NOVA's digital activities for teens.



Presenter: National Science Foundation

Location: Across from Room 202a
Refer to Map on Page 3

National Science Foundation (NSF)



Pick up an NSF Passport, learn about the NSF support behind math research, and enter to win a tablet computer (adults) or Foldscope microscope (kids). Take a selfie or a photo with some of our NSF math crew.



Presenter: ThinkFun

Location: Down from Room 209c
Refer to Map on Page 3

ThinkFun



ThinkFun is the world's leader in addictively fun games that stretch and sharpen your mind. Game play for ages 5-8 and up, with fliers for pickup by educators and teachers.



Presenter: WGBH

Location: Down from Room 204c
Refer to Map on Page 3

WGBH



Share the joy of early math learning with your preschoolers while playing new math apps and activities! Tablets provided, or download the free apps on your own devices. Preschoolers, parents, and early childhood teachers will all enjoy.



Presenter: Young People's Project

Location: Hall D

Young People's Project



Come play the Flagway™ Games — a mathematical sport. Stop by and find out how you can get involved in the math literacy movement near you.

2-4
5-7
8-10
11-13
14-18
18+

Recommended
Age Groups

FILM ROOM EVENTS

Alfred P. Sloan Foundation Film Room



Presenter: John Urschel
Room: 209ab
Start Time: 10:15 AM
End Time: 10:40 AM

The Physics of Football

Join John Urschel, retired Baltimore Ravens offensive lineman and Ph.D. candidate in mathematics at MIT, for a popular mathematics talk for middle schoolers and up!



Presenter:
Dr. Holly Krieger
Room: 209ab
Start Time: 11:00 AM
End Time: 11:25 AM

The Mathematical Games of Numberphile

Come see excerpts from two of Dr. Holly Krieger's favorite Numberphile videos, and grill her on the mathematics behind the scenes! You'll learn about an addictive mathematical game of solitaire called the Dollar Game, and how to use math to defeat your friends at Penney's game.



Presenter:
Alfred P. Sloan Foundation
Room: 209ab
Start Time: 11:45 AM
End Time: 12:10 PM

"Chasing Patterns"

What do sunflowers, pine cones, and apple cores have in common? Join Liam in this 17-minute film as he solves a riddle and awakens to how dreams and mathematics are united in his imagination.



Presenter: NOVA
Room: 209ab
Start Time: 12:30 PM
End Time: 12:55 PM

NOVA: Prediction by the Numbers

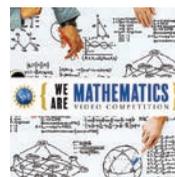
NOVA's Prediction by the Numbers explores stories of statistics in action and investigates how the big data models that rule our lives also pose big, disturbing questions. Watch clips from NOVA's latest dive into the world of statistics and probability in this screening event.



Presenter: National
Science Foundation
Room: 209ab
Start Time: 1:15 PM
End Time: 1:40 PM

NSF "We Are Mathematics" Contest Winners: Short Film Debuts

What is math research? What can you really do with that stuff you learned in math class? Discover the amazing things you can do with math by watching the winning videos from the NSF "We Are Mathematics" video competition and meeting the mathematical scientists who created them.



2-4
5-7
8-10
11-13
14-18
18+

Recommended
Age Groups

FILM ROOM EVENTS

Alfred P. Sloan Foundation Film Room



Presenter:
Mathematical Sciences
Research Institute
Room: 209ab
Start Time: 2:00 PM
End Time: 2:25 PM

“Navajo Math Circles” and Other MSRI Films

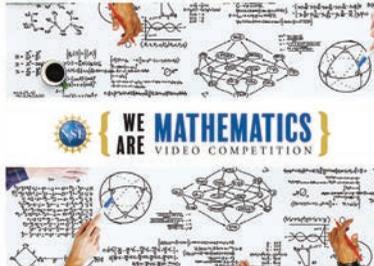
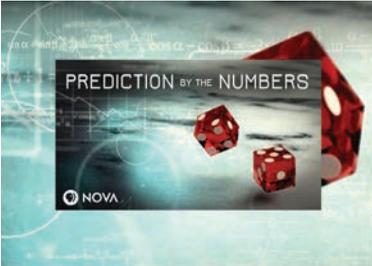
Come enjoy three trailers for public math films by MSRI: meet Navajo youth whose resilience and ingenuity will impress you, an Iranian female Fields medalist who is inspiring a generation, and a Chinese mathematician who made leaps in the field of twin primes.

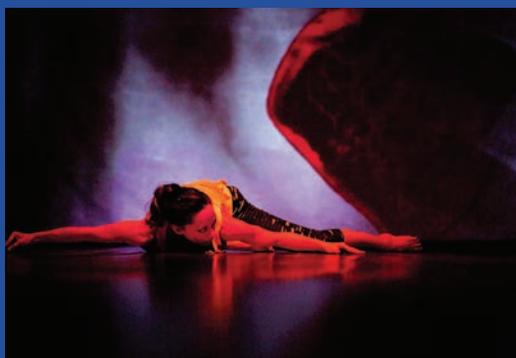


Presenter:
Dr. Joseph Teran
Room: 209ab
Start Time: 2:45 PM
End Time: 3:10 PM

Movie Animation in “Moana” and “Frozen”

Come see clips from some of your favorite movies, and peek at how mathematicians make snow flurries and ocean waves on the big screen.



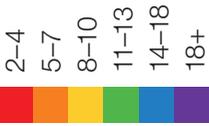


FESTIVAL SPOTLIGHT

DANCE OF THE DIAGRAM

2 PM – 3 PM | Level 1 (Street Level) Salons A, B, C

See more information on Page 21. For location details, see map on Page 3.



Recommended
Age Groups

EVENTS BY START TIME

10:15 AM

ALFRED P. SLOAN FOUNDATION FILM ROOM

The Physics of Football

Presenter: John Urschel
Room: 209ab
End Time: 10:40 AM

Join John Urschel, retired Baltimore Ravens offensive lineman and Ph.D. candidate in mathematics at MIT, for a popular mathematics talk for middle schoolers and up!



MATHICAL AUTHOR READING

Presented by the Mathematical Sciences Research Institute (MSRI)

PreK — Have You Seen My Dragon?

Presenter: Steve Light
Room: 204c
End Time: 11:00 AM

Join children's book author and illustrator Steve Light as he reads *Have You Seen My Dragon?* and demonstrates his drawing process.



PRESENTATIONS

Data Did That!

Presenter:
Dr. Amelia Taylor
Room: 207b
End Time: 11:00 AM

Join data scientist Dr. Amelia Taylor to learn how data about you is collected, and how it is transformed into shopping recommendations, friend suggestions, genetically engineered microbes, smart homes, and much, much more. **Also at 2:00 PM in Room 207a.**



How Many Degrees are in a Martian Circle?

Presenter:
Dr. James Tanton
Room: 201
End Time: 11:00 AM

In this session we'll joyously go through interesting tidbits from the development of mathematics that bring the human — and alien — story to life. Who chose the number 360 for the count of degrees in a circle, for example, and what would Martians choose? **Also at 2:00 PM in Room 206.**

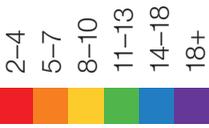


FESTIVAL SPOTLIGHT

MAKE OR TAKE ACTIVITIES

All Day | Various Locations

Activity descriptions start on Page 8.
See map on Pages 2–3 for activity locations.



Recommended
Age Groups

EVENTS BY START TIME

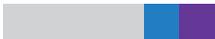
10:15 AM



Presenter: Mark Mitton
Room: 202b
End Time: 11:00 AM

Impromptu Magic & Math — Learn Stunts to Dazzle your Friends and Family!

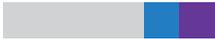
Join magician Mark Mitton and learn surprising trick and stunts that you can perform with everyday objects, anywhere and anytime! This is a dynamic workshop with lots of fun for the whole family. *Also at 3:15 PM in Room 207a.*



Presenter:
Dr. Joseph Teran
Room: 207a
End Time: 11:00 AM

Math and the Movies

Who made the ocean flow in “Moana”? Who made the snow swirl in “Frozen”? Mathematicians, that’s who! Come learn about the math behind the magic of modern movie visual effects. *Also at 12:45 PM in Room 202a.*



Presenter:
Dr. Annie Raymond
Room: 202a
End Time: 11:00 AM

Math and Your Love Life

Suppose boys and girls in a school wish to date. Can we match-make so no couple breaks up? How does the math change for straight, gay and bi kids? In this talk, we’ll see math is a powerful matchmaker, and you should ask your crush out ASAP. *Also at 12:45 PM in Room 206.*



Presenter:
Dr. Suzanne Weekes
Room: 206
End Time: 11:00 AM

Safety Goggles Not Required: Things You Didn’t Know You Could Do with Your Laptop

Computational modeling: from movie art to cancer experiments, explore how information travels through materials “created” in a laptop laboratory. Join Dr. Suzanne Weekes as she explores this unexpected mathematical sphere. *Also at 2:00 PM in Room 202a.*



11:00 AM

ALFRED P. SLOAN FOUNDATION FILM ROOM

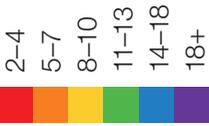


Presenter:
Dr. Holly Krieger
Room: 209ab
End Time: 11:25 AM

The Mathematical Games of Numberphile

Come see excerpts from two of Dr. Holly Krieger’s favorite Numberphile videos, and grill her on the mathematics behind the scenes! You’ll learn about an addictive mathematical game of solitaire called the Dollar Game, and how to use math to defeat your friends at Penney’s game.





Recommended
Age Groups

EVENTS BY START TIME

11:30 AM

MATHICAL AUTHOR READING

Presented by the Mathematical Sciences Research Institute (MSRI)



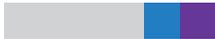
Presenter: Judy Cox
Room: 204c
End Time: 12:15 PM

Grades K–2 — Sheep Won't Sleep

Join children's author Judy Cox as she reads *Sheep Won't Sleep*, a most woolly and unusual counting book!



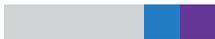
PRESENTATIONS



Presenter:
Dr. Marcus du Sautoy
Room: 207a
End Time: 12:15 PM

The Creativity Code: The Art of Algorithms and the Algorithms of Art

Algorithms are driving our cars and finding us love. But will algorithms be able to do something we regard as uniquely human: to create art? Dr. Marcus du Sautoy explores how good the new AI is at composing music, writing novels, painting canvases, even creating mathematics. *Also at 2:00 PM in Room 202b.*



Presenter:
Dr. Avi Wigderson
Room: 206
End Time: 12:15 PM

Cryptography: Secrets and Lies, Knowledge and Trust

Can you play poker on the telephone with people you don't trust? Amazingly, you can! Come find out how — the ideas involved, and related ones, also underlie internet security and e-commerce. *Also at 2:00 PM in Room 207b.*



Presenter:
Dr. Mary Lou Zeeman
Room: 207b
End Time: 12:15 PM

Math, Ice Cores, and Planet Earth

Come and see inside an ancient ice core, and find out about cool ways you can use math to help keep Planet Earth healthy. *Also at 12:45 PM in Room 207b.*

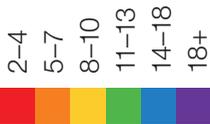


Presenter:
Dr. Lillian Pierce
Room: 201
End Time: 12:15 PM

Math, Music, History: 300 Years in 30 Minutes

Come tour some highlights of Math and Music over the past 300 years, with mathematician and violinist Dr. Lillian Pierce. *Also at 3:15 PM in Room 206.*





Recommended
Age Groups

EVENTS BY START TIME

11:30 AM



Presenter:
Dr. Francis Su
Room: 202b
End Time: 12:15 PM

Mathematics for Human Flourishing

Mathematics can be a hopeful vehicle for building virtue and helping people flourish, and the practice of mathematics can help people connect to their deeply human desires. Dr. Francis Su says, "I will share what a prison inmate has taught me about doing mathematics well." *Also at 2:00 PM in Room 201.*



Presenter:
Dr. Emily Riehl
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End Time: 12:15 PM

The Mathematics of Social Choice

If more than two candidates run for office, how should the winner be chosen? Mathematics suggests several options. Join Dr. Emily Riehl to delve into the paradoxes and possibilities of the mathematics of voting. *Also at 3:15 PM in Room 202b.*



11:45 AM

ALFRED P. SLOAN FOUNDATION FILM ROOM



Presenter:
Alfred P. Sloan Foundation
Room: 209ab
End Time: 12:10 PM

"Chasing Patterns"

What do sunflowers, pine cones, and apple cores have in common? Join Liam in this 17-minute film as he solves a riddle and awakens to how dreams and mathematics are united in his imagination.



12:30 PM

ALFRED P. SLOAN FOUNDATION FILM ROOM

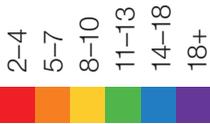


Presenter: NOVA
Room: 209ab
End Time: 12:55 PM

NOVA: Prediction by the Numbers

NOVA's Prediction by the Numbers explores stories of statistics in action and investigates how the big data models that rule our lives also pose big, disturbing questions. Watch clips from NOVA's latest dive into the world of statistics and probability in this screening event.





Recommended
Age Groups

EVENTS BY START TIME

12:45 PM

MATHICAL AUTHOR READING

Presented by the Mathematical Sciences Research Institute (MSRI)



Presenter: Seth Fishman
Room: 204c
End Time: 1:30 PM

Grades 3–5 — A Hundred Billion Trillion Stars

Join star-gazing author Seth Fishman as he dives into humongous numbers. From the hundred billion trillion stars to a trampoline explanation of gravity, he engages the audience, asks the hard (er, silly) questions, and makes it clear that you are the one number that matters.



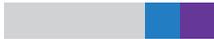
PRESENTATIONS



Presenter:
Nancy Scherich
Room: 202b
End Time: 1:30 PM

A Fine Art of Problem Solving: How Mathematicians Use Braids to Save the Day, One Ribbon at a Time

People all around the world love braiding: weavers, hairdressers... and even mathematicians! Meet mathematician Nancy Scherich and learn about how she uses dance to teach the mathematics of braids. *Also at 3:15 PM in Room 201.*



Presenter: John Urschel
Room: 207a
End Time: 1:30 PM

The Geometry of Chess

Join John Urschel, retired Baltimore Ravens offensive lineman and Ph.D. candidate in mathematics at MIT, for a popular mathematics talk for high schoolers and up! *Also at 3:15 PM in Room 202a.*



Presenter:
Dr. Joseph Teran
Room: 202a
End Time: 1:30 PM

Math and the Movies

Who made the ocean flow in “Moana”? Who made the snow swirl in “Frozen”? Mathematicians, that’s who! Come learn about the math behind the magic of modern movie visual effects. *Also at 10:15 AM in Room 207a.*

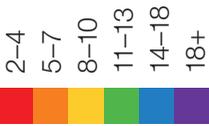


Presenter:
Dr. Annie Raymond
Room: 206
End Time: 1:30 PM

Math and Your Love Life

Suppose boys and girls in a school wish to date. Can we match-make so no couple breaks up? How does the math change for straight, gay and bi kids? In this talk, we’ll see math is a powerful matchmaker, and you should ask your crush out ASAP. *Also at 10:15 AM in Room 202a.*





Recommended
Age Groups

EVENTS BY START TIME

12:45 PM



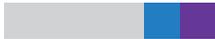
Presenter:
Dr. Mary Lou Zeeman
Room: 207b
End Time: 1:30 PM

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ASL interpretation provided for this event.



Presenter:
Dr. Holly Krieger
Room: 201
End Time: 1:30 PM

The Power of Primes

You've seen her on the YouTube channel Numberphile. Now join Dr. Holly Krieger as she explores the beautifully weird and weirdly beautiful world of pure mathematics — a world of chaotic attractors, narcissistic numbers, and more! **Also at 3:15 PM in Room 207b.**



1:15 PM

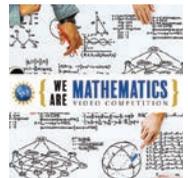
ALFRED P. SLOAN FOUNDATION FILM ROOM



Presenter: National
Science Foundation
Room: 209ab
End Time: 1:40 PM

NSF "We Are Mathematics" Contest Winners: Short Film Debuts

What is math research? What can you really do with that stuff you learned in math class? Discover the amazing things you can do with math by watching the winning videos from the NSF "We Are Mathematics" video competition and meeting the mathematical scientists who created them.



2:00 PM

ALFRED P. SLOAN FOUNDATION FILM ROOM

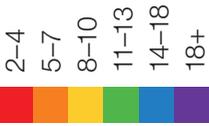


Presenter:
Mathematical Sciences
Research Institute
Room: 209ab
End Time: 2:25 PM

"Navajo Math Circles" and Other MSRI Films

Come enjoy three trailers for public math films by MSRI: meet Navajo youth whose resilience and ingenuity will impress you, an Iranian female Fields medalist who is inspiring a generation, and a Chinese mathematician who made leaps in the field of twin primes.





Recommended
Age Groups

EVENTS BY START TIME

2:00 PM

MATHICAL AUTHOR READING

Presented by the Mathematical Sciences Research Institute (MSRI)

Grades 6–8 — Secrets, Lies, and Algebra

Join author Wendy Lichtman as she reads in the voice of Tess, an 8th grader who uses mathematical thinking to solve the real problems in her life. All those unknowns and variables in Tess's friendships? Sounds like navigating junior high, doesn't it?



Presenter:

Wendy Lichtman

Room: 204c

End Time: 2:45 PM

PRESENTATIONS

Dance of the Diagram

Inspired by Dr. James Simons's theory, BARKIN/SELISSEN PROJECT'S Dance of the Diagram merges math and art through lush athletic choreography, hexagonal patterns, and an intriguing cyclical course that illustrates the journey toward the inevitable.



Presenter:

BARKIN/SELISSEN
Project

Room:

Salons A,B,C on Level 1
Refer to Map on Page 3

End Time: 3:00 PM

The Creativity Code: The Art of Algorithms and the Algorithms of Art

Algorithms are driving our cars and finding us love. But will algorithms be able to do something we regard as uniquely human: to create art? Dr. Marcus du Sautoy explores how good the new AI is at composing music, writing novels, painting canvases, even creating mathematics. **Also at 11:30 AM in Room 207a.**



Presenter:

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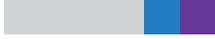
Dr. Avi Wigderson

Room: 207b

End Time: 2:45 PM

EVENTS BY START TIME

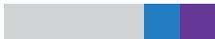
2:00 PM



Presenter:
Dr. Amelia Taylor
Room: 207a
End Time: 2:45 PM

Data Did That!

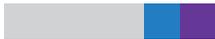
Join data scientist Dr. Amelia Taylor to learn how data about you is collected, and how it is transformed into shopping recommendations, friend suggestions, genetically engineered microbes, smart homes, and much, much more. **Also at 10:15 AM in Room 207b.**



Presenter:
Dr. James Tanton
Room: 206
End Time: 2:45 PM

How Many Degrees are in a Martian Circle?

In this session we'll joyously go through interesting tidbits from the development of mathematics that bring the human — and alien — story to life. Who chose the number 360 for the count of degrees in a circle, for example, and what would Martians choose? **Also at 10:15 AM in Room 201.**



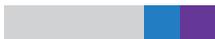
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 **ASL interpretation provided for this event.**



Presenter:
Dr. Suzanne Weekes
Room: 202a
End Time: 2:45 PM

Safety Goggles Not Required: Things You Didn't Know You Could Do with Your Laptop

Computational modeling: from movie art to cancer experiments, explore how information travels through materials "created" in a laptop laboratory. Join Dr. Suzanne Weekes as she explores this unexpected mathematical sphere. **Also at 10:15 AM in Room 206.**

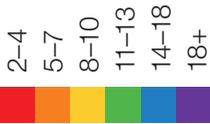


FESTIVAL SPOTLIGHT

ALFRED P. SLOAN FOUNDATION
FILM ROOM

10:15 AM – 3:10 PM | Room 209ab

See the complete schedule on Pages 12–13.



Recommended
Age Groups

EVENTS BY START TIME

2:45 PM

ALFRED P. SLOAN FOUNDATION FILM ROOM

Movie Animation in “Moana” and “Frozen”

Come see clips from some of your favorite movies, and peek at how mathematicians make snow flurries and ocean waves on the big screen.



Presenter:

Dr. Joseph Teran

Room: 209ab

End Time: 3:10 PM

3:15 PM

MATHICAL AUTHOR READING

Presented by the Mathematical Sciences Research Institute (MSRI)

Grades 9–12 — Really Big Numbers

How big are the numbers in Really Big Numbers? They start out small, and grow so large that your mind will be (we guarantee it) fully boggled! Join the author/illustrator/math professor Dr. Richard Schwartz for a tour through this colorful title.



Presenter:

Dr. Richard Schwartz

Room: 204c

End Time: 4:00 PM

PRESENTATIONS

A Fine Art of Problem Solving: How Mathematicians Use Braids to Save the Day, One Ribbon at a Time

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Presenter:

Nancy Scherich

Room: 201

End Time: 4:00 PM

The Geometry of Chess

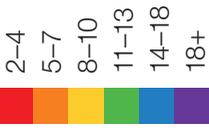
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Presenter: John Urschel

Room: 202a

End Time: 4:00 PM



Recommended
Age Groups

EVENTS BY START TIME

3:15 PM



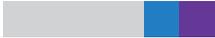
Presenter: Mark Mitton
Room: 207a
End Time: 4:00 PM

Impromptu Magic & Math — Learn Stunts to Dazzle your Friends and Family!

Join magician Mark Mitton and learn surprising trick and stunts that you can perform with everyday objects, anywhere and anytime! This is a dynamic workshop with lots of fun for the whole family. **Also at 10:15 AM in Room 202b.**



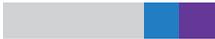
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Room: 206
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FESTIVAL SPOTLIGHT

PRESENTATIONS

10:15 AM – 4:00 PM | Rooms 201, 202a, 202b, 206, 207a, 207b

For times see Pages 4–5. Presentation details start on Page 15.

THINGS TO DO AFTER THE NATIONAL MATH FESTIVAL:

- Learn more about the math behind my favorite things**
- Watch “Navajo Math Circles” at the Smithsonian’s American Indian Museum**
4:30 pm today, Rasmuson Theater
- Visit More Math! online**
Fun family math resources: books, puzzles, games, crafts, movies, and more — tinyurl.com/MoreMathNMF
- Check out the 2019 NMF on social media — post your favorite photos**
[@natmathfestival](https://twitter.com/natmathfestival) | facebook.com/nationalmathfestival | [#2019nmf](https://twitter.com/2019nmf)
- Watch movies on Numberphile**
Recreational math YouTube channel with 2.8+ million subscribers
- Get a copy of the Mathical Book list**
MathicalBooks.org — literary fiction and nonfiction for ages 2–18
- Find my local Math Circle (and sign up!)**
MathCircles.org — after-school recreational math for all ages
- Discover more MSRI public events**
MSRI.org/Public — films, Bay Area events, and more
- Sign up for the National Math Festival e-newsletter**
Keep in touch and get sneak previews of fun math resources — tinyurl.com/NMFnews
- Explore stuff I picked up today in the Make or Take Spiral**
Watch for an online archive of Make or Take handouts, coming soon!
- Submit a blog post to the National Math Festival web site**
Tell us about your experience at the Festival! — mathfestival@msri.org
- Make a note: Back in 2021 for the next National Math Festival**