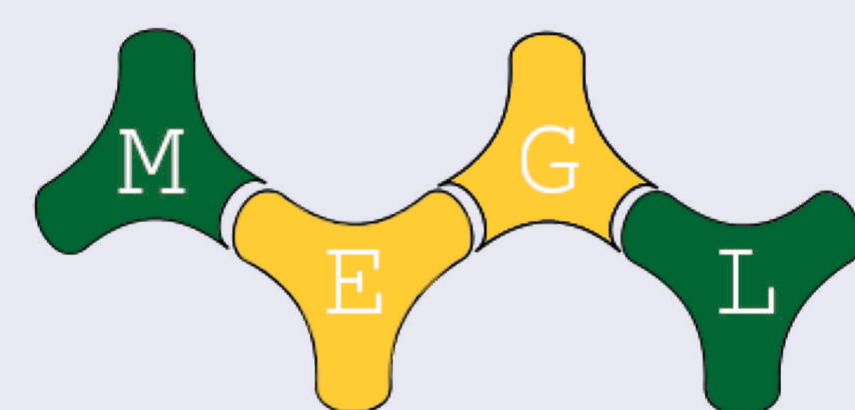# Spring 2021 Outreach Team

Dr. Harry Bray, Susan Tarabulsi, Aidan Donahue

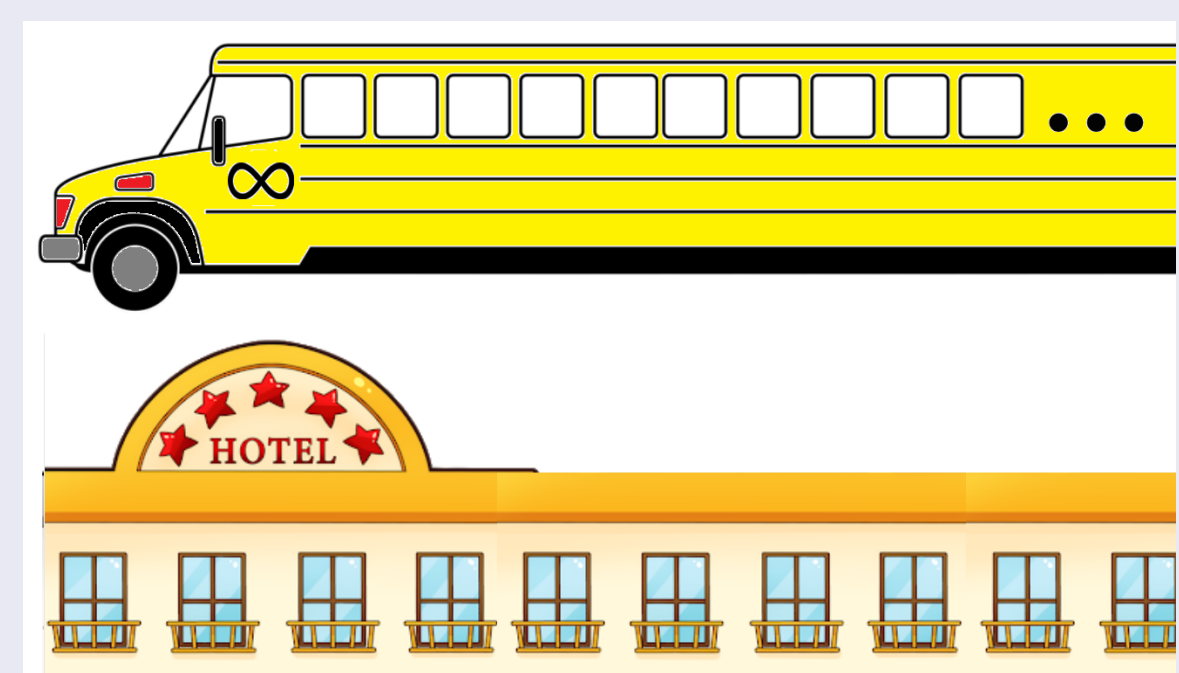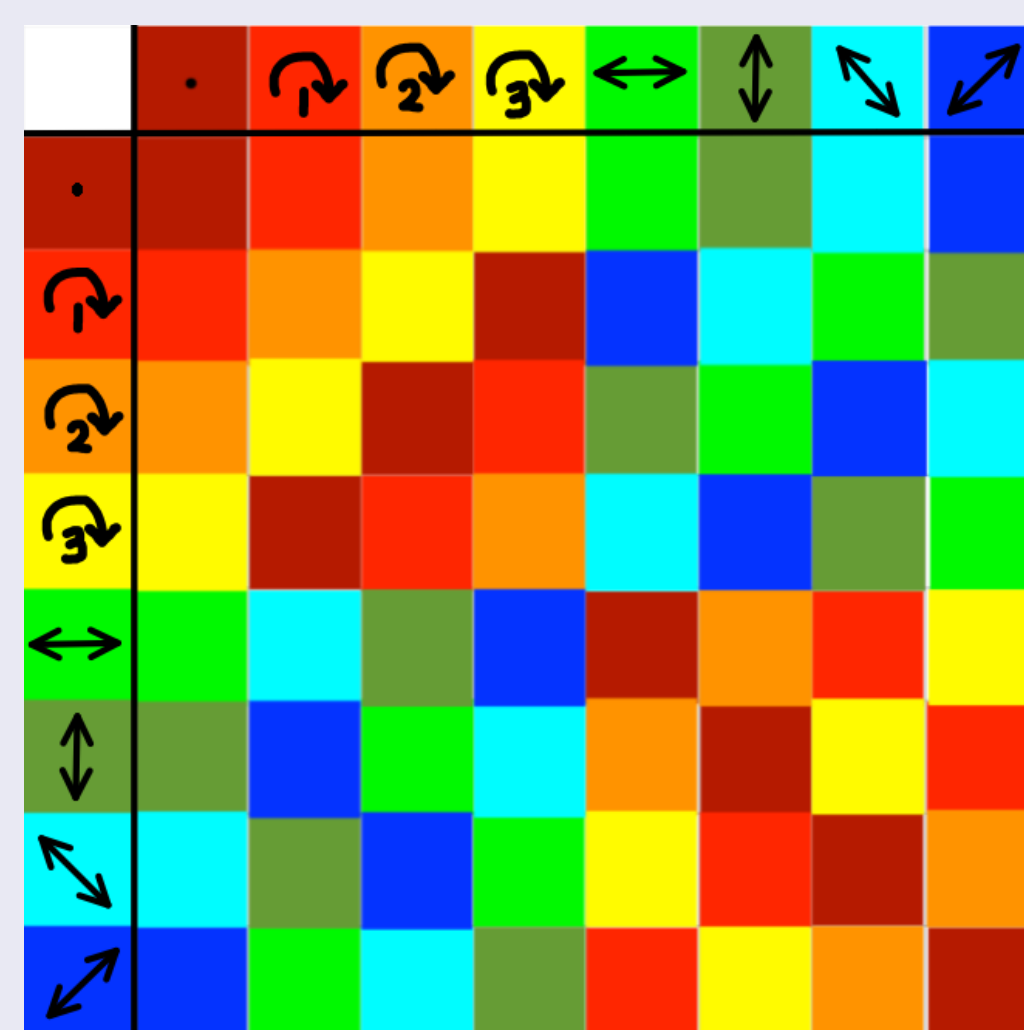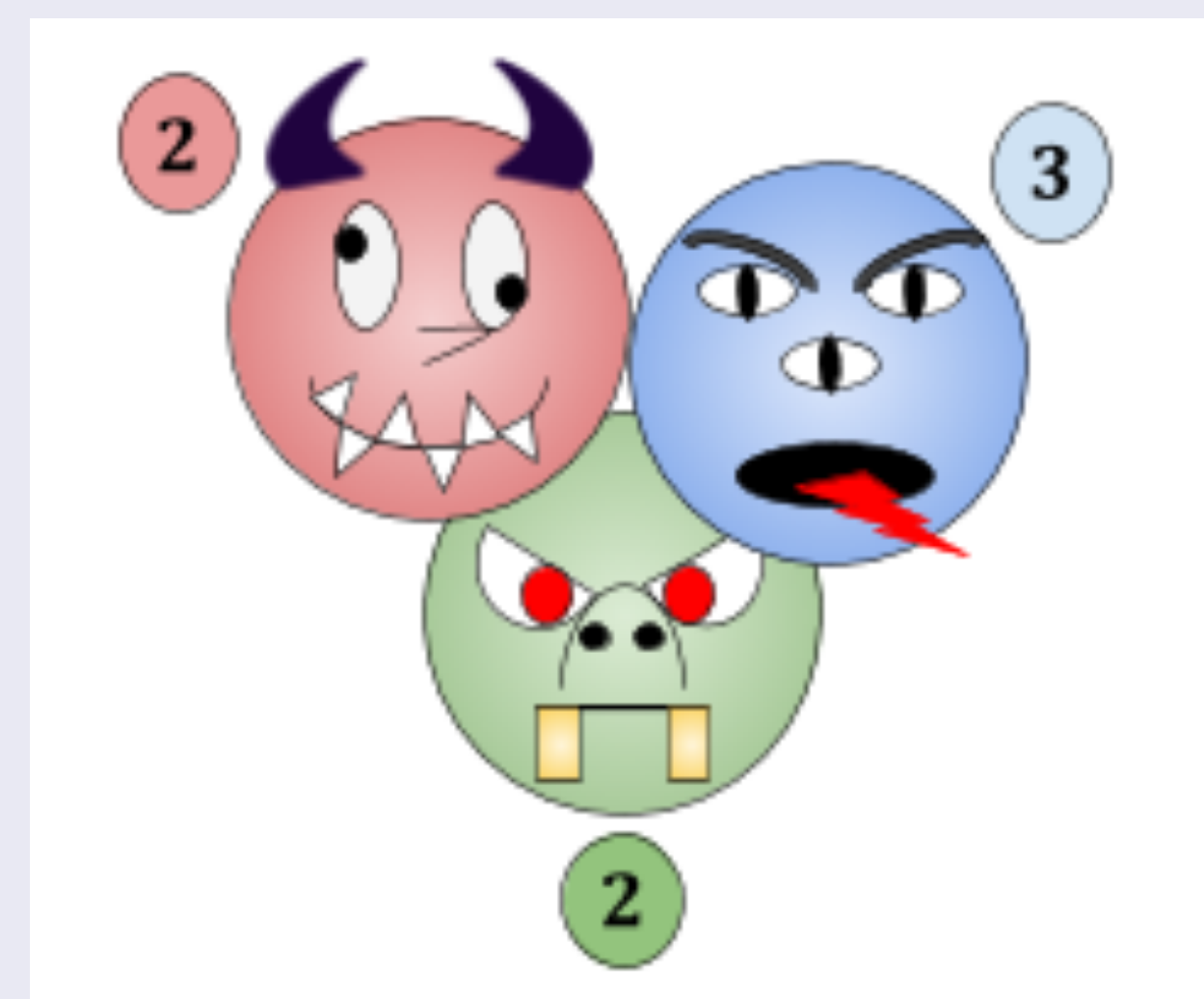## Mason Experimental Geometry Lab

GEORGE MASON UNIVERSITY

April 30, 2021

Introduction

This semester, we continued to fully operate online. We were successfully able to overcome the challenges of virtual learning to engage students and get them excited about math. Our main focus this semester was to create a new activity and get in contact with schools.
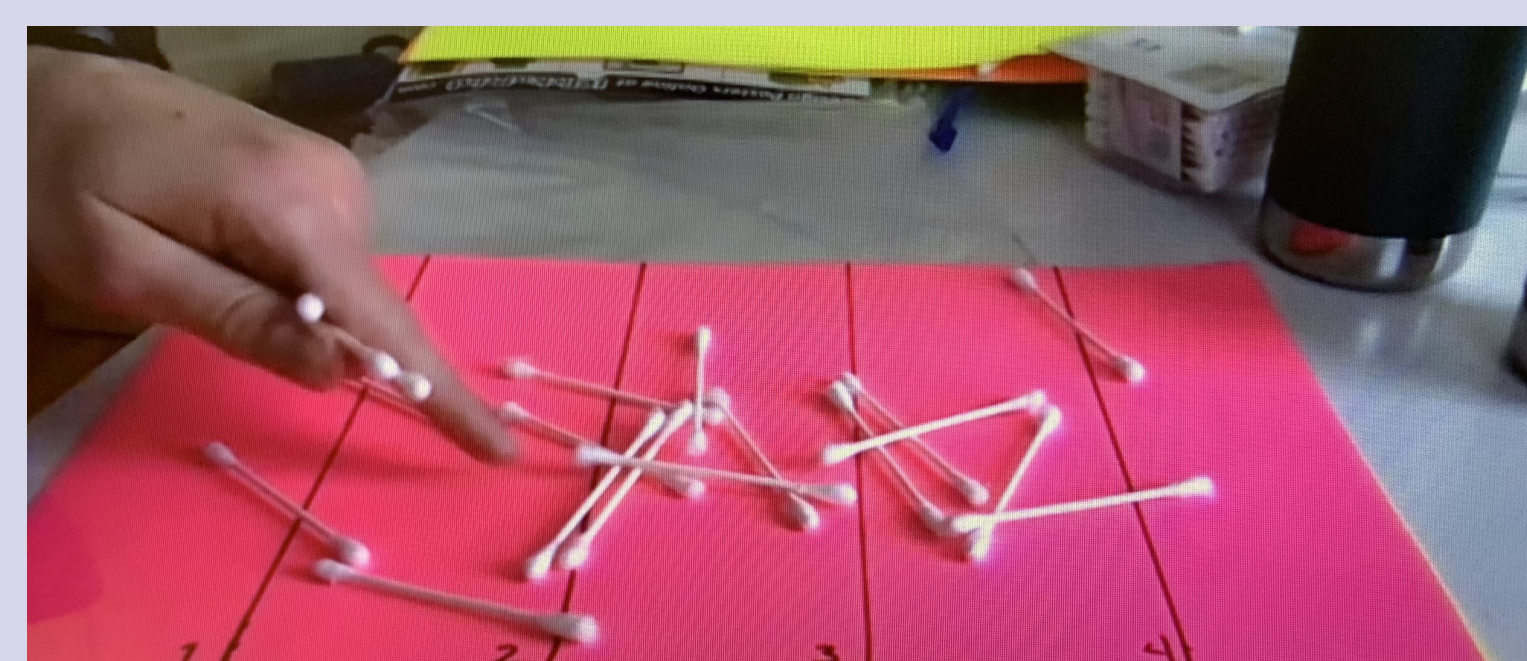
Activities

- You Can Count on Monsters - Online!
  - Prime factorization
- Really BIG Numbers - Online!
  - Linear, polynomial, exponential, and factorial growth
- Your Teachers are Lying to You - Online!
  - Context matters in mathematics
- Playground of the Infinite - Online!
  - Hilbert's infinite hotel
- Snowflake Symmetry - Online!
  - Group theory
- Hyperbolic Crochet
  - Hyperbolic geometry
- **NEW Irrational Thinking - Online!**
  - **Irrational numbers**

Accomplishments

Expanded Our Community

- Number of students reached:
  - Elementary and Secondary Schools:

    1096 students reached virtually!

Still more students to reach virtually!

New Activity - Irrational Thinking!

Irrational Thinking:

- Teach students about the wonderful world of irrational numbers
  - $\sqrt{2}$ - Constructing a square with area 2
  - π - Buffon's Needle
  - ϕ - The Fibonacci Spiral
- The talk will use sequences and geometric reasoning (which are a part of the VA standards of learning) to teach students about these numbers.

Virtual Learning

Due to online learning, we've adapted a number of our talks to an online format. All five of our regular talks have an online option, as well as our brand new one.

- You Can Count on Monsters
- Really Big Numbers
- Your Teachers are Lying to You
- Playground of the Infinite
- Snowflake Symmetry
- **Irrational Thinking**

Virtual Activity Pictures

Future Goals

- Reach more students and target more secondary school students
- Continue to refine irrational numbers, adapting to virtual and in-person settings
- Conduct activities for teachers
- Create more follow-up lessons
- Find ways to make the booking process more efficient
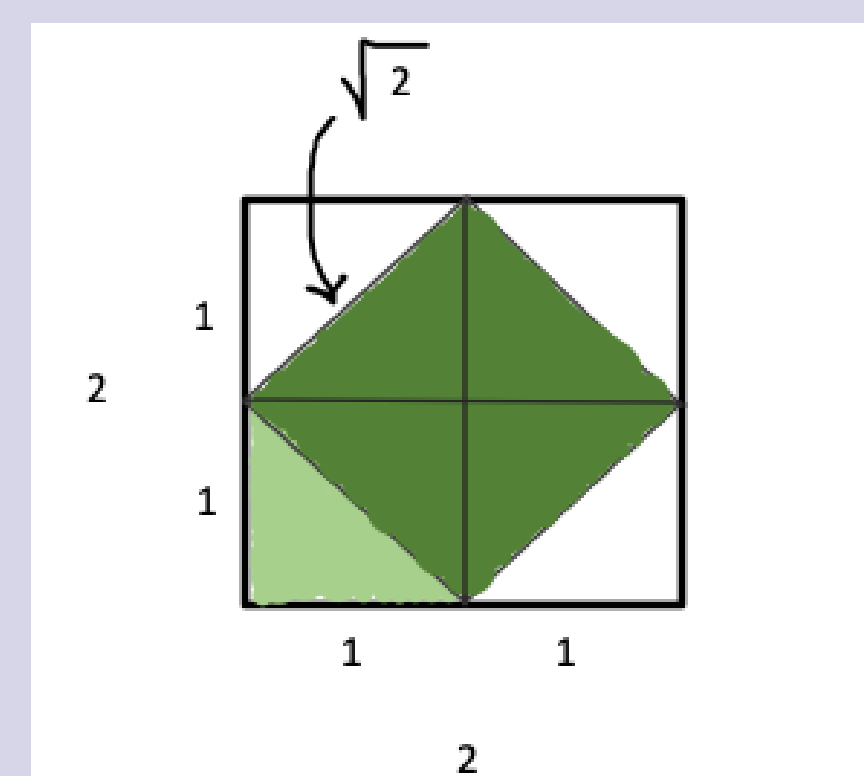- Improve user experience and functionality of the website

Potential New Activity Themes

- Mathematical Puzzles
- Topology Magic
- Counter Examples in Mathematics

More Pictures