Math Club 5

- Math Club for Grades 5 7
- Develop creative problem-solving skills.
- Students participate in two competitions
 - \circ MathCON
 - New York Mathematics League (NYML)
- Introduce advanced mathematical concepts in probability, combinatorics and codes and ciphers.
- Students immerse in mathematics by working on an investigative project.

Instructor:	Vibha Mane
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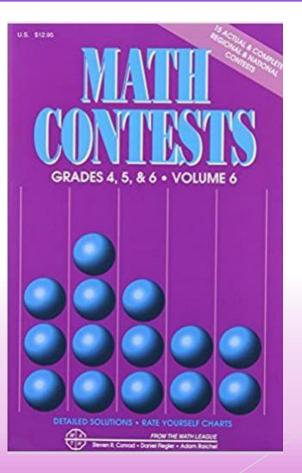
MathCON Competition

- Contests for Grades 4 7.
- Students take Online Weekly Practice Tests at home (total 16).
- Practice problems in-class.
- Contest Format
 - Online, during Club Hours, in February
 - 32 multiple-choice questions
 - \circ 50-minute duration
 - \circ Calculator is permitted
- All Math Club students are invited to participate.

- A small number of students (top 1%) are invited for the Final Round.
- The Final Round is held inperson, in Chicago, in May.

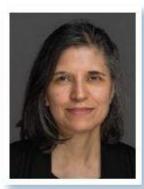
Math League Competition

- Contests for Grades 4 7.
- Online Practice Tests.
- Practice problems in-class
- Contest Format
 - Online, during Club Hours
 - \circ $\$ February (Grade 6 & 7) and April (Grades 4 & 5)
 - 32 multiple-choice questions
 - \circ 30-minute duration.
 - \circ Calculator is permitted
- All Math Club students are invited to participate.



MathCON Competition High Scorers in SchoolNova Newsletter

MATHCON



MA	┥╋	<i>HCON</i>	
STRONGER	MATH	BRIGHTER FUTURE	

<u>VIBHA MANE</u> SchoolNova Math Teacher Adjunct Faculty, Department of Electrical and Computer Engineering

MathCON is a nationwide Math Competition open to all students in grades 4 through 12. Over 250,000 students, from 50 US states and Canada, participate in this competition. This year 8 students from Math Club 5 participated in the First Round Online Competition, in grade levels 4, 5 and 6.

MathCON	Grade	National PCTL*
Jude Badawi	4	96%
Saanvika Reddy	5	94%
David Goldberg	5	93%
Mayukh Mazumdar	6	92%
Robert Zhang	6	89%

*The percentile is calculated separately for each grade level

NovaNews

Advanced Math Concepts - Probability

- Counting principles, permutations, combinations, partitioning.
- Basic probability concepts.
- Bernoulli and binomial trials.
- Experiments with dice and coins.
- Experiments illustrating law of large numbers.
- Story of Jacob Bernoulli.

ARTIS CONJECTANDI PARS PRIMA, Complettens Tractatum Hugenii de Ratiociniis in Ludo Alex, Cum Annotationibus JACOBI BERNOULLI.

<u>新教育教育部院院院院校会会会会会会会会会</u>

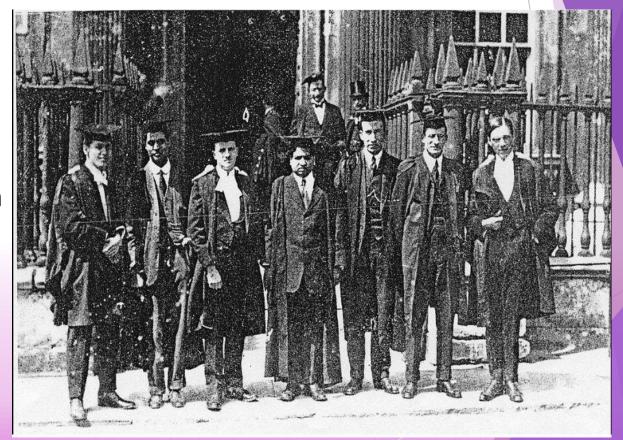
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Advanced Math Concepts - Codes and Ciphers

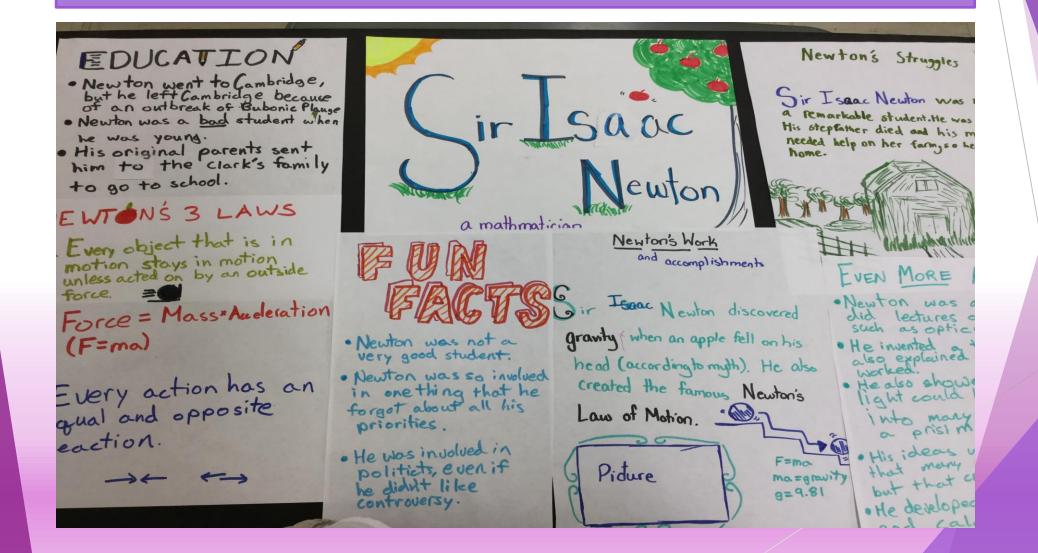
- Reduce numbers modulo a positive integer.
- Convert numbers from decimal to base-26.
- Kids-RSA: middle school version of encryption and digital signature.
- Story of Ramanujan



Investigative Projects - I

- Investigate and prepare a presentation on a mathematical concept or the life of a famous mathematician.
- Students work in teams of two or three.
- Students present their work to the class. Parents and families are invited.

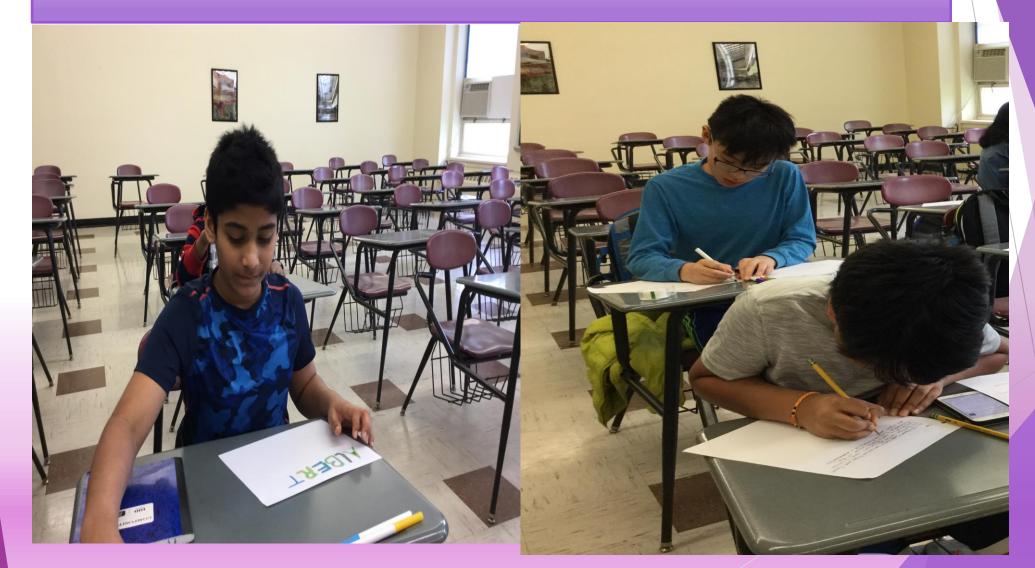
Investigative Projects - II



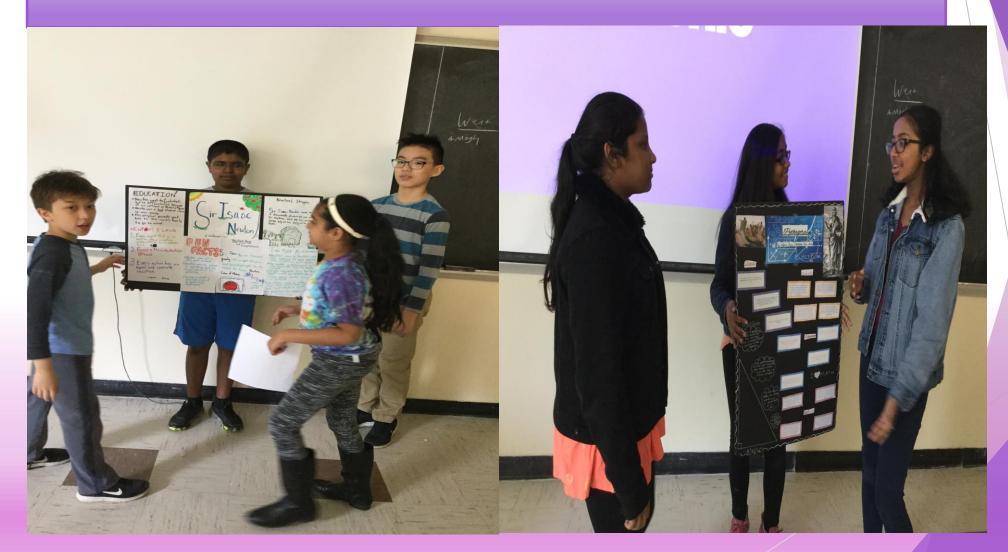
Investigative Projects - III



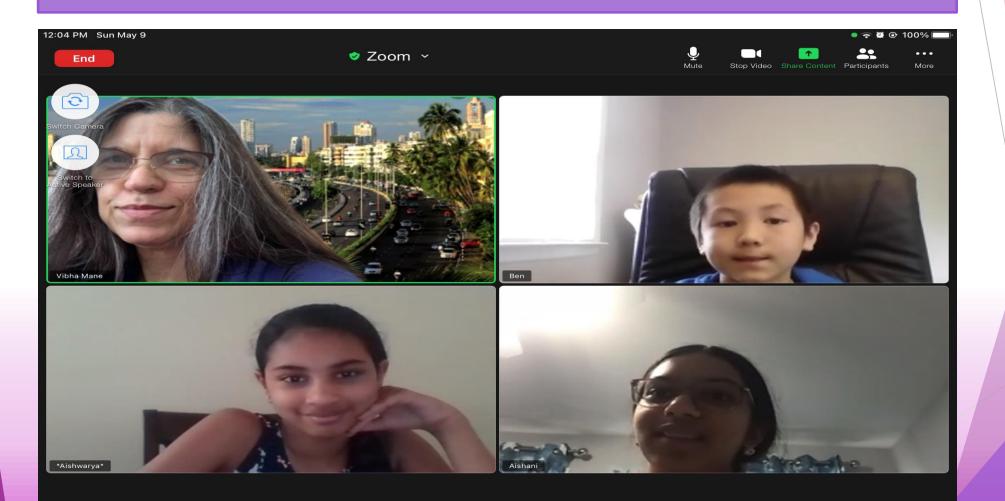
Investigative Projects - IV



Investigative Projects - V



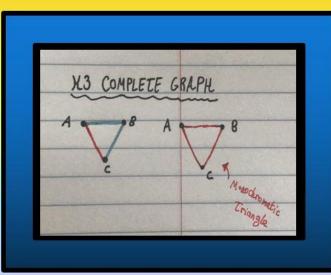
Investigative Projects - VI



Investigative Projects - VII

<u>Complete Graphs - K3</u>

In a K_3 complete graph, there are three vertices. Each point is connected by an edge to every other vertex. The graph to the right has a complete graph and a monochromatic triangle. A monochromatic triangle is a triangle that is created in the same color. The rightmost triangle is a monochromatic triangle and was created using red, only one color. The left triangle is not a monochromatic triangle and is created in both red and blue. In K_3 graphs, it is possible to avoid a triangle in one color - monochromatic triangle.



Investigative Projects - VIII

History of Cipher

Cryptography and Cipher. The earliest known records of cryptography is around 1900 BC. The Egyptians carved hieroglyphs onto a wall of a tomb.

Around 486 BC in Ancient Greece, Spartan warriors would carry scytales to send messages in the battlefield so their enemies wouldn't know what there were doing or saying.

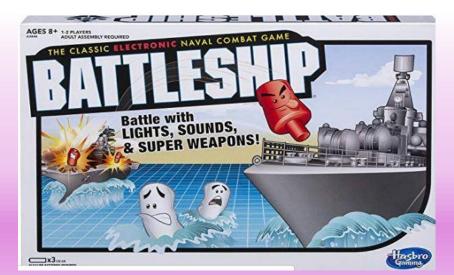
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Fun Stuff - Games











Fun Stuff - Movies

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