Math Club 5

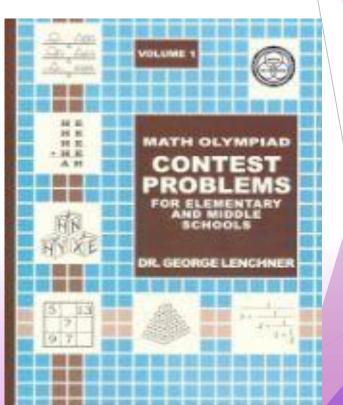
- Math Club for Grades 4 6
- Develop creative problem-solving skills.
- Students participate in MOEMS Math Olympiads.
- Introduce advanced mathematical concepts in probability, combinatorics and codes and ciphers.
- Students immerse in mathematics by working on an investigative project.

Instructor:	Vibha Mane
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Email:	mane@schoolnova.org



MOEMS Math Olympiad

- Math Olympiads for Elementary and Middle School (MOEMS).
- Strengthen problem solving skills.
- Practice problems in-class.
- Olympiad packets for practice.
- Five contests, held once a month, from November through March.
- All Math Club students are invited to participate.



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.

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<u>新教育教育部院院院院校会会会会会会会会会</u>

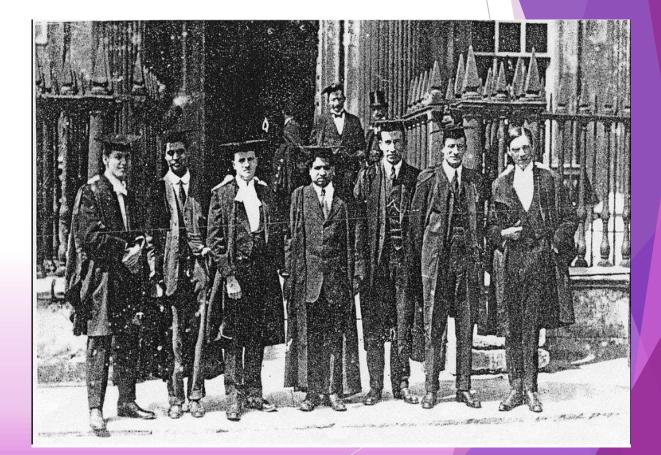
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Advanced Math Concepts - Codes and Ciphers

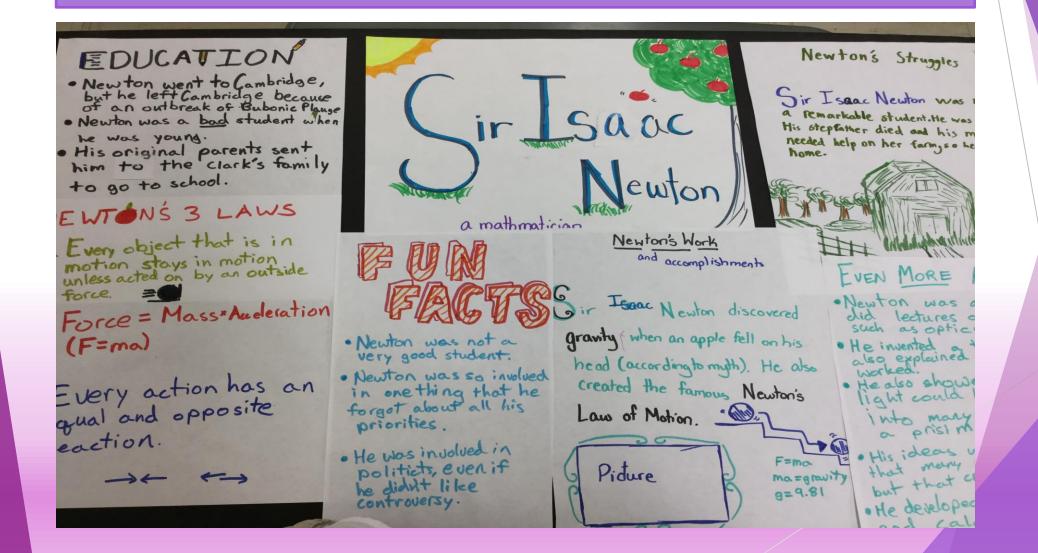
- Reduce numbers modulo a positive integer.
- Convert numbers from decimal to base-26.
- Kids-RSA: middle school version of encryption and digital signature.
- Story of Ramanujan



Investigative Projects - I

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

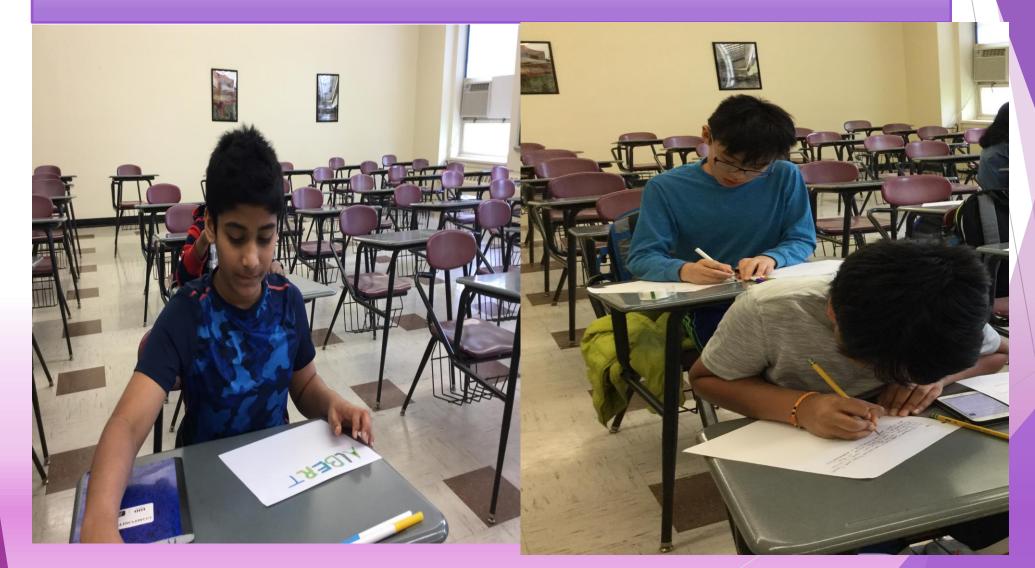
Investigative Projects - II



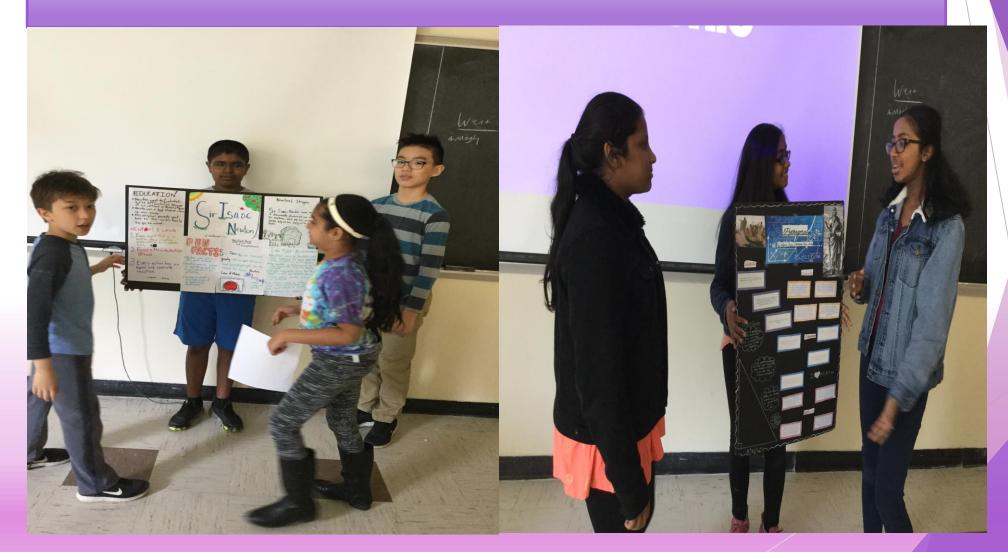
Investigative Projects - III



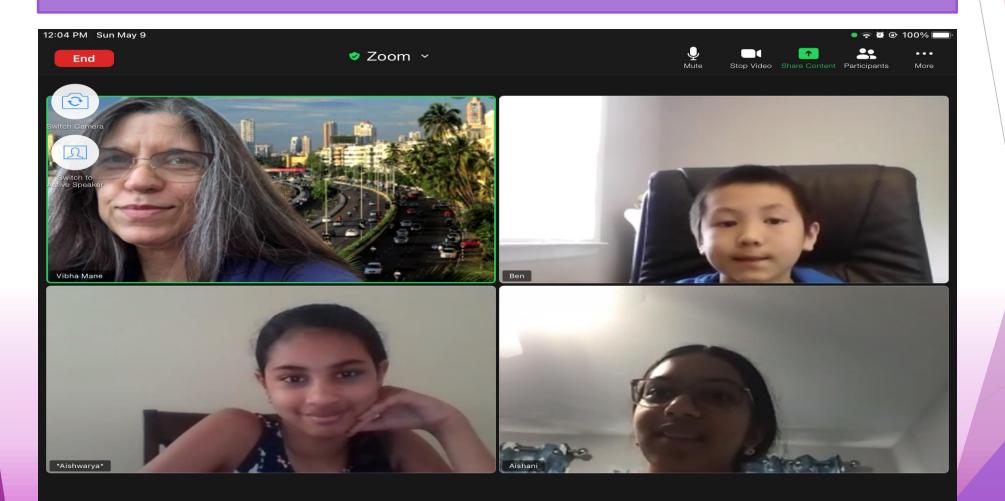
Investigative Projects - IV



Investigative Projects - V



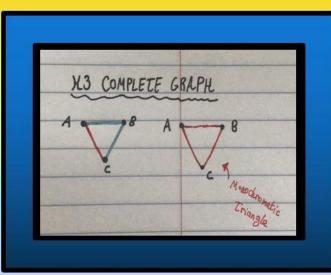
Investigative Projects - VI



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.

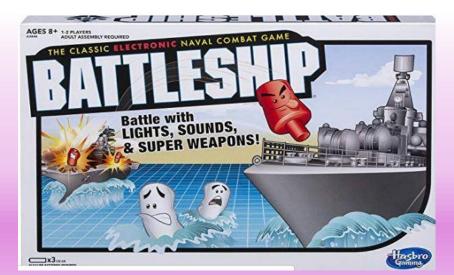
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Fun Stuff - Games











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