

Students Explore the Mathematical Universe

Last week a dozen inquisitive students from Nashua, Hollis, Brookline, and elsewhere met in the Hollis Social Library to participate in the Hollis Summer Math Circle. A Math Circle is an enrichment activity where young people can play with unusual mathematical ideas, without the pressure of homework, quizzes, or grades. "A Math Circle works best when every individual is both a learner and a teacher," according to Mark Longtin, a former Wall Street trader, MIT grad, and lifelong mathematical enthusiast who helped set up the Circle. "Challenge kids with some interesting problems, and watch them go." The Math Circle participants, ranging from age 10 to 17, gathered daily for one week in the Hollis library to explore the mathematical universe.

The history of Math Circles goes back to Bulgaria in the early 1900s, where professional mathematicians would meet with secondary school students on a regular basis to cultivate young talent and to work together solving problems. The concept spread to the US in the 1990s and now there are over 160 Math Circles from coast to coast. "Parents are paying thousands of dollars for extracurricular academic activities. I thought it was important for Southern New Hampshire to have a free, accessible alternative," Longtin added.

"I enjoyed all of the fun and challenging puzzles, such as How Many Squares on a 5x5 Grid," said Tristan Moffroid, a 4th grader at Second Nature Academy in Nashua and a very enthusiastic participant.

Math Circle members discussed topics ranging from Babylonian mathematics, to patterns generated by the number 142857, to creating new dice using polynomials. "Something I enjoyed was learning that you can split one die into two different dice," said Vedant Patil, a 7th grader at Elm Street Middle School in Nashua. "That was really cool."

The emphasis in the Math Circle is on camaraderie, not competition. "I liked how we brainstormed ideas as a team, then came up with creative solutions," said Garima Rastogi, an 8th grader from Concord. Garima comes from a mathematical family - both her brothers participated in the Circle. "We covered some concepts we have seen before, just in a more interesting and proof-based way."

"I thought it was great," said Math Circle mentor Mike Wenger, a 22 year veteran math teacher from Londonderry High School, and captain of the New Hampshire Math Team. "The kids enjoyed the Circle; every one learned quite a bit."

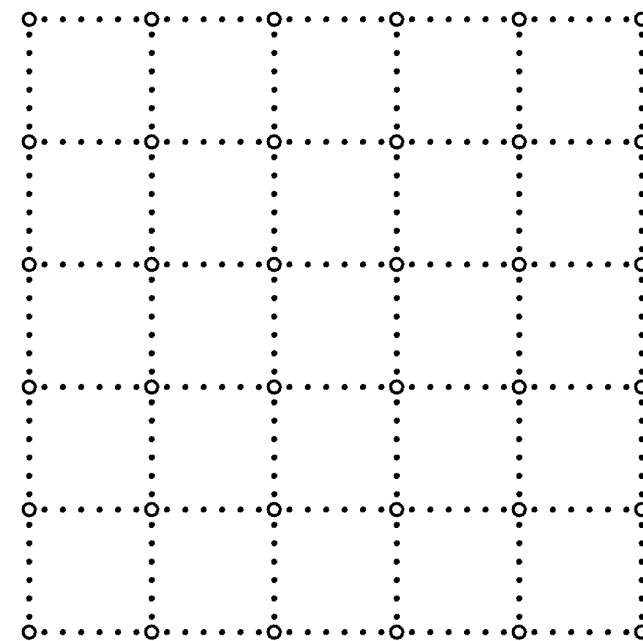


Isabelle Hu, Tristan Moffroid, Avary Whitehead, Vaibhav Rastogi, and Anshul Rastogi discuss Ancient Babylonian Multiplication.

It has been so uplifting to see a group of motivated students exploring and enjoying math," stated Semra Kılıç-Bahi, Professor of Mathematics at Colby Sawyer College and advisor to the Circle. Ms. Kılıç-Bahi's PhD dissertation was in Operator Theory, and she currently leads an effort to increase women's participation in mathematics. "I am looking forward to working with Mr. Longtin and Mr. Wenger to provide further opportunities for students who would like to explore math topics which are not typically covered in school curriculum."

In response to the participants' positive feedback, Longtin, Wenger and Kılıç-Bahi are looking to continue the circle in the fall-dates and times to be announced shortly. Interested participants should email GraniteStateMathCircle@gmail.com for more information.

About the squares question? The consensus of the Circle was that you could make 55 squares, but one participant claimed being able to make 105.



How many squares can you make?