

Math Fair: Students Link Mathematics to Everyday Life

By Sean Ely

The fourth through twelfth grades participated in a mathematics fair Tuesday, May 22, organized by teachers Elizabeth Staats-Burt and Susan Bennett. The gymnasium was filled from wall to wall with colorful presentation boards, fraction pizza slices, miniature homemade snowmobile ramps, wooden bridges, and interested students, judges, faculty, and parents.

"The students had about two months to complete their projects," Mrs. Bennett said. "They could take absolutely anything they wanted and study the math behind it. Some students put a great deal of work into their projects."

The mathematics fair teaches the students more than just numbers and difficult concepts, she noted.

"They learn how to do independent working, how to budget their time, how to do research, how to investigate a little bit about math, even if they don't exactly know how to get to the conclusion at first," she said. "This is important in learning math, but more importantly, seeing it in real life concepts, rather than just from a textbook."

Students were interviewed by one of four judges about their project and what they learned from it.

Seventh grader Devon Hunt studied the idea of coin probability. He noted that although there are two sides to every coin, the probability of it landing on either side actually depends on the angle at which it is flipped, as well as the way someone goes about launching

it. He especially enjoyed flipping the coins, and he even made a dime turn up tails 20 times in a row.

"These types of projects are better than being in the classroom because it gives you the chance to create something," he said. "It was challenging fitting everything on the board, with all of the different fonts and pages, but it was fun."

He received an honorable mention for his work.

Sixth grader Lou Clark's study of the ski slopes at Breckenridge Ski Resort in Colorado earned a tie for first place in the sixth and seventh grade division with Collin Armstrong's catapult theory. With some help from his mother, he studied the angles of the hills and mountains that comprise the resort. The study of angles and slopes was made more interesting because his family loves to ski, and his introduction to geometry will be helpful when he takes the class in the future.

"It was frustrating in the very beginning," Mr. Clark said. "We did the entire first part and realized it was completely wrong. We had to start from the beginning. But it turned out OK. My favorite part was looking at it when it was finished."

Leo Horn studied the Pythagorean Theorem. It sounds daunting, but he broke the fundamental geometric theorem down to its simple equation and informed his listeners that it is easy and can even help in the measurements of a house. It was monotonous cutting out all of the pieces of paper for the display board, he said, but he



Sophomore Rhodene "Michi" Mullings stands next to her "Death by Bridge" project that was awarded second place in the algebra II and above division.

enjoyed it because it got him out of the classroom and he had fun learning. His work earned an honorable mention.

"It's better than just sitting around and reading information," he said of the exercise.

Second place in the sixth and seventh grade went to Onaca Bennett, a sixth grade student who illustrated the different geometric transformations used to make animations on her brightly colored poster and moving stick figures on her laptop computer. She loves cartoons, so she studied reflection, rotation, translation, size changes, and scale changes in the world of cartoons.

"A lot of the math was new to me," she said, "so it didn't make it very easy when I had to put everything together. My hobbies include watching a lot of cartoons, so I wanted to do something along those lines."

Honorable mention winner in the fourth and fifth grade division was Adrienne Rilenge, a fifth grader with a painted nose to look like a dog, who researched the annual costs of having a bichon, as opposed to owning a golden retriever. She calculated it by calling a veterinarian and looking up prices of shots, pills, food, and toys, online and at the store. It costs her family \$865.38 a year to maintain her bichon, while it would cost the average owner more than \$1,468 for the retriever.

"Golden retrievers need four cups of food a day, while my dog only needs one," she noted. "Also, the golden retrievers go through 20 toys a year."

Fourth grader Dana Roguska knows one thing for sure: She loves watching television. When she was assigned this project, she had the idea to compare the prices of Charter cable and Dish satellite systems, but she didn't stop there. She wanted to answer the question, "Should my family switch back from satellite to cable to save money?" She calculated that it costs \$26.45 a month for cable and \$67.77 for satellite. She can receive 50 channels on cable and 170 non-pay-per-view channels via satellite.

Then, she had everyone in her family write down the



Fifth grader Adrienne Rilenge presents her "Dogs Cost Comparison" project, which earned her an honorable mention at the school's mathematics fair.

shows they watch. It turned out that they only watched eight on cable and 16 on satellite, but only because the 16 were available, not because they were true fans to those programs. They could live just fine without them, Miss Roguska observed. Blocking channels on the Dish network actually costs money, she also noted, and she concluded that her family should indeed go back to cable, because it is much more practical.

"It's a lot more fun to do these projects because you don't have to start them right away," she said of the mathematics fair. "You have a longer period to work on it, plus, your parents can help you with it. You can spend more time on it and you don't have to rush."

The high school students tackled some heavier issues in the mathematics world and built some models to go along with their topics.

Junior Caleb Straight chose the golden ratio as his topic, at Mrs. Bennett's suggestion. The golden ratio, or 'phi' in the Greek alphabet, can be explained by taking a square, drawing a line through the midpoint, using a protractor to measure corner to corner, then drawing a line to show you where the opposite corner is.

This was a topic in mathematics that Mr. Straight didn't know very much about before working on the project, but

working hard on it turned out to be rewarding for him, because he was confident in explaining the methods of using the golden ratio.

"This was easier to understand than book work we do in class," he said. "You want to make sure you know everything on your poster and that you can explain it. You learn it better that way. Mrs. Bennett was great in helping me understand it."

Mrs. Bennett said takes pride in her students' understanding of the material. That is why she wanted to become a teacher in the first place.

"I love being able to see students get that little glimmer of, 'I finally understand!' I love that feeling," she said.

Third place winner in the Algebra II and above division was Riley Chaffee, a junior who discovered that the best launch point off a ramp is at 45 degrees. He also learned that the same distance away from the 45-degree mark will launch an object the same length from the ramp. For example, both a 40-degree launch point and a 50-degree launch point would send a ball with the same velocity the same distance, as long as there is no wind effect. Mr. Chaffee tied in his science class with this mathematics project.

"This wasn't a very hard project for me because I have been doing all of this in my

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Overall mathematics fair winner Fuller Cowell, a sophomore, crouches by his "Go Big or Go Home" project. His PowerPoint presentation, poster board, research and notes, and remote control snowmobiles impressed the judges, earning him blue ribbon honors.



Sixth grader Onaca Bennett shows off her sixth and seventh grade division second place award for "Transformations in Computer Animations."