Fun with Math on Valentine's Day

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Synopsis

This article describes various love-themed activities the department of mathematics at Bryant University hosted during a college-wide celebration of love called "The Arts and Science of Love", held during Valentine's Day 2018. Inspired by Susan D'Agustino's article "To Fall in Love with Math, Do This" [1], Bryant mathematicians came up with many creative and engaging activities that brought mathematics and its practitioners closer to the students on campus. Much fun was had.

Introduction

The Department of Mathematics at Bryant University is housed in the College of Arts and Sciences (A&S). Once a semester the College of A&S enjoys drawing attention to our college by doing something entertaining with and for our students, and in fact for the university at large. During the spring semester of 2018, the college as a whole decided to celebrate Valentine's Day, and we created a fun event called "The Arts and Science of Love." On the afternoon of Valentine's Day, we took over a space in the student center, and each department was charged to come up with an event or two that would illuminate a relationship between each particular department and love.

We in the math department needed to think of some ideas about love and mathematics; ideas that could be activities to engage students and administrators while drawing attention to our department. At first we were stymied with how we could relate mathematics and the thought of love. About the same time an article by Susan D'Agostino appeared in JHM entitled "To Fall

in Love with Math, Do This" [1]. The timing of the article could not have been better! After getting some starter ideas from the reading, we came up with some entertaining activities.

This article may give some mathematics departments ideas on how to generate some enthusiasm about mathematics while having a bit of fun. Overall, it was an entertaining afternoon, and it was great to interact with our university students, majors and non-majors alike, outside of the classroom.

Activities Celebrating Love and Mathematics

When the College of A&S decided to host this event, we in the department were not sure exactly how to portray mathematics and love in a casual event for students. Luckily for us, in January of 2018, JHM published an article "To Fall in Love with Math, Do This" [1]. This article was an interesting twist on a series of 36 questions originally written by Arthur Aron intended to make participants fall in love. D'Agostino took this list and devised a mathematical version of the 36 questions that would possibly help people initiate and kindle a love relationship with mathematics. Her article started with introducing readers to several famous mathematicians or well-known people who used mathematics in their respective fields. The 36 questions were designed to help one ponder what their personal relationship is or could be with the world of mathematics.

Borrowing some ideas from D'Agostino, we created a poster board that highlighted some of the famous mathematicians and the other world-renowned individuals who used mathematics in their own careers. We posted large portraits of each person with a small paragraph about the individual (see Figure 1), and many students and administrators found it fascinating to see who these individuals were and how they used mathematics in their lives.

For example, most people were surprised to learn that Beethoven used mathematics to help him create many magnificent musical scores while deafness overtook him in his later years. Another mathematician who attracted attention was Evelyn Boyd Granville who became better known after the movie *Hidden Figures.* It surprised visitors that she had been only the second African-American woman to earn a doctorate in mathematics.
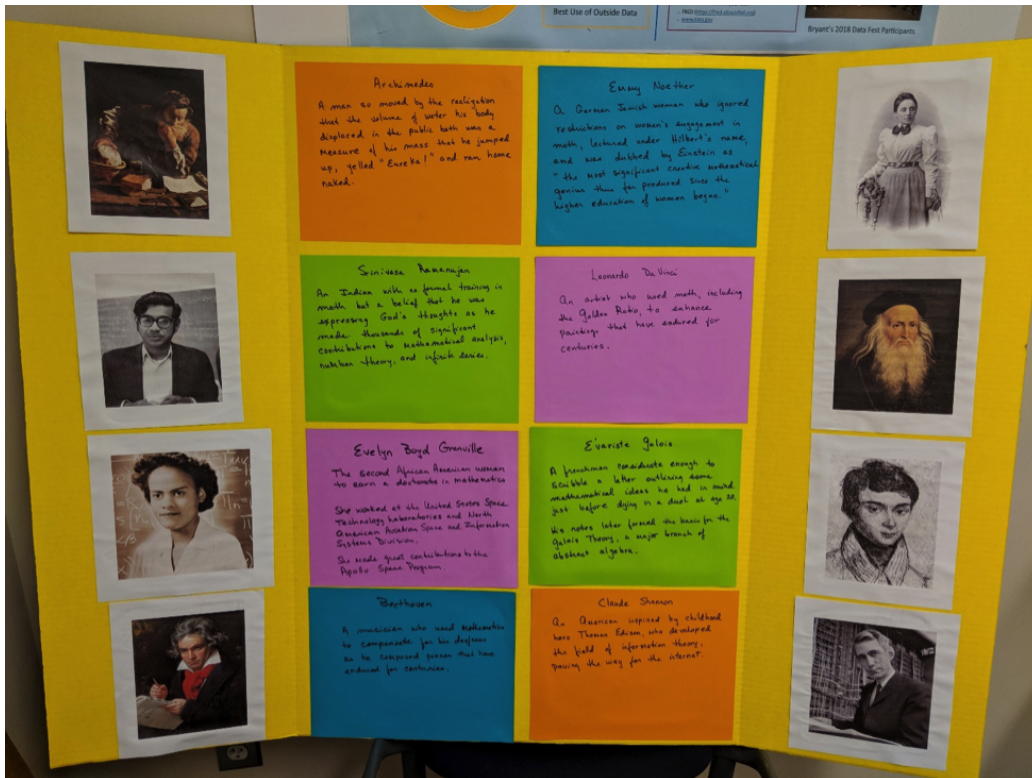
Figure 1: A poster of mathematicians and their life stories.

Her work with the Apollo space program was brought to life in the movie, but people who stopped by the math table were also intrigued to actually see her picture.

D'Agostino also posed questions in her article about how people can relate to mathematics. While we did not want to ask people 36 questions, we did ask all interested people to consider two of those questions regarding mathematics and to write a response. Not knowing whether the responses would be positive or not, we were pleasantly surprised with the answers.

1. What was your greatest mathematical accomplishment, no matter how big or how small?

Learning multiplication tables up to 12 WITH SPEED!

Being able to add $2 + 2$ without using my fingers!

When I complete an Excel spreadsheet, I feel it's a mathematical accomplishment!

Pushing fear aside and enrolling in Honors Calculus during my senior year of high school!

Passing my first actuarial exam!

2. What is your most treasured Math memory?

Using math to solve escape room puzzles or Sudoku

Pushing through Calc I and Calc II with Prof. Capalbo — AWESOME CLASSES!

Receiving a 100% on my Interest Theory test!

The moment it all clicked!

Once we got our creative juices running, we came up with several fun "things to do" at our table. A couple of the math faculty enjoyed sharing their extra-curricular talents, math-oriented or not. One professor entertained many students, faculty, and staff with his knowledge about astrology, which indeed was extensive. Everyone was fascinated to consider whom they might be most attracted to, while thinking of each person's astrological sign. Another professor read palms for anyone interested and quite a few people were highly impressed with his accuracy! Figure 2 shows Professor Gao reading the palm of Professor Capalbo, who is said to have "awesome classes"!

A third professor highlighted some statistics about marriage and divorce, which certainly took a more sober look at love and mathematics.

To get the students thinking statistically a bit, we displayed a large crystal water pitcher full of heart candies with all the Valentine sayings. Of course these heart candies have been a staple of Valentine's Day for many years, but the sayings do change. We challenged students to guess the most popular saying on all the candies and estimate the percentage of times that saying was engraved overall. After many guesses, there were several ties for the actual right answer, but only one person came close to the actual percentage of times that saying was used. The winner won the crystal pitcher along with all the candy! Interesting to note, one student assistant, who helped count out all the sayings on each candy, put all the data into a descriptive histogram.

Figure 2: Professor Gao reading the palm of Professor Capalbo.

All the sayings graphed together followed a nicely shaped normal distribution. And the saying "Be Mine" was actually the most popular.

Visitors to our table were also given the opportunity to create their own Valentine's Day card with a catchy mathematics phrase, such as "I will always love you exponentially".

Student Impressions of the Art and Science of Love and Mathematics

After the event, it was refreshing to hear from some of the students and get feedback. Some mentioned that reading the unique details of the mathematicians was interesting. Others wrote that they were very surprised with some of the answers given in guessing what saying on the heart candies had the highest percentage. They were surprised to see just how random some of the guesses were!

Many of the students wrote that they enjoyed engaging with the professors about things that they were passionate about beyond the traditional classroom setting, such as the professor who is passionate about the zodiac. The students also mentioned that they liked taking a few basic concepts from classroom teaching and applying them to a more "interesting" topic, such as discussing statistics about marriage / divorce in today's world.

Although we did not intend it to be so, the afternoon truly showcased the personalities of the different faculty members, which certainly helped draw people to the math table.

Finally one student put it quite succinctly, "I find College of Business professors to be more passionate about their field, whereas the College of A&S professors tend to have passions different than their academic fields, helping me to see them more like people than just my professors. That's what most of us like about the A&S professors."

The afternoon of the "the Arts and Sciences of Love" within the Department of Mathematics was well received. Students and faculty alike enjoyed themselves, and we recommend trying an "out of the box" idea such as this in other schools. However, one warning: counting up all the frequencies of sayings on each of the candy hearts out of two large bags of heart candies was a much longer task than we realized!

References

[1] D'Agostino, Susan, "To Fall in Love with Math, Do This", *The Journal of Humanistic Mathematics*, Volume **8** issue 1 (June 2018), pages 271–276. Available at https://scholarship.claremont.edu/jhm/vol8/iss1/11/, last accessed on January 29, 2019.