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Dear parents of Daniel Tatar,

We were very pleased to have Daniel with us again for MathPath 2024 at Rockhurst University in Kansas City. It was wonderful to explore both a new campus and a new city this year. The academic facilities were excellent for effective classes and lectures. We enjoyed many bright sunny days and pleasant cooler evenings. Music and laughter filled our residence halls during free times. Students took many opportunities to socialize with one another and with faculty and staff in the dining hall during meals. We had a lot of fun playing together outside and going on a variety of field trips. Daniel and his fellow students truly helped create a happy and productive environment for this summer's MathPath.

The academic program included three daily plenaries – one on the history of mathematics, one given by a guest lecturer, and one on mathematical writing. During the guest plenaries, Daniel had the privilege of hearing talks from many notable professors from the Kansas City area, as well as full weeks of plenaries from Sam Vandervelde and Paul Zeitz. Glen Van Brummelen presented on the early history of mathematics during the first two weeks, and Deborah Kent taught us about more recent math history in the final two weeks! As a returnee, Daniel participated in a History Pullout with Matt DeLong during the second and third weeks, where he learned about Dedekind's work with the Gaussian integers and similar number fields and his attempts to recover unique factorization by introducing the notion of "ideal primes." Throughout the month, Professor DeLong also led a daily session on mathematical writing, incorporating a thorough analysis of the questions on the Qualifying Test.

Each week Daniel took two breakout courses, allowing him to learn about a variety of topics in more depth. Here are his eight breakout topics. You will undoubtedly have plenty to learn and discuss about each of these topics with Daniel!

Number Theory I with Geremias Polanco (Prof. Polanco)
A Research Experience on Sequences with Geremias Polanco (Prof. Polanco)

Number Theory II with Geremias Polanco (Prof. Polanco)
Mathemagic with Cornelia Van Cott (Dr. Van Cott)

Math and Music with Silas Johnson (Silas)
Special Relativity with Silas Johnson (Silas)

Cryptology with Jon Rogness (Prof R)

The Shape of Space with Jon Rogness (Prof R)

Rounding out the mathematics for the day, students saw the presentation of the new Problem of the Day (PoD) just before lunch and learned the solution to the previous PoD from one of their fellow students in the late afternoon. All correct solutions contributed to a communal progress thermometer; in the final week of camp we reached the goal, so the students earned a camp-wide PoD celebration. Students also took part in daily math conferencing time, which provided an excellent opportunity for students to work with each other and with the faculty and counselors on their homework and other interesting mathematics. Of course, there were many additional mathematical conversations among students, faculty, and staff at meals and during free time.

Our Student Life Director, Julie Vega, coordinated weekly events that helped campers get to know one another and reflect on participation in our community as they discussed MathPath culture, managing stress, and the professional journeys of people who work in mathematics. Dr. Vega and a team of counselors and staff also organized send-ups (notes of gratitude), arranged lunch activities for students to make connections based on their personal values, prepared optional resources on topics requested by the student community, led a discussion about imposter syndrome, and showed *Hidden Figures* and *Inside Out*.

Students had the opportunity to participate in many recreational activities. During free time after lunch and dinner, a wide range of activities were offered, including sports and outdoor games, puzzles, card and board games, recreational mathematical activities including Rockhurst's Mathapalooza Room, the second annual MathPath 5K fun run, and relaxing in hammocks around campus (among other options)! Sundays were full of smaller group activities that the students got to choose from, including adventures and sightseeing opportunities around the greater Kansas City area. This year's whole camp Monday trips included a visit to the Science City museum, an outing to the Kansas City Zoo, and a final excursion to the Worlds of Fun amusement park. For optional Sunday trips, Daniel chose the Rush FunPlex for laser tag and go-karts, challenge rooms at BRKTHROUGH, and an escape room.

Daniel was immediately recognized as a polite and inquisitive camper who was kind and conscious of others. Daniel consistently expressed gratitude to both staff and other campers. He was an intentional listener and offered his full attention to ensure every person felt heard. Daniel's curiosity led him to engage in many meaningful conversations. He often asked his counselor questions to start conversations during walks or mealtimes. He asked many questions of others as well and listened intently as he learned and shared his own knowledge. At one point, Daniel asked his counselor Ayanna to help him learn a new solution technique for a Rubik's Cube. Daniel's curiosity and wonderful conversational skills made others around him feel welcomed and included.

Daniel's passion for math and curiosity were showcased in all of his breakouts. Prof. Polanco noted that in both Number Theory I and II, Daniel was hardworking and one of the first to volunteer to present solutions on the board. Dr. Van Cott observed similarly in Mathemagic, but qualified that Daniel would often politely defer to others when they also were eager to share. Many faculty appreciated Daniel's politeness, as he would regularly say "thank you" after each class session. Silas, who taught Daniel in both Math and Music and Special Relativity, praised

Daniel's curiosity and noted that he put a lot of energy into his breakouts. Multiple faculty also extolled Daniel's teachability, perhaps his greatest asset. He was known to both give and receive help during class, and he was not shy to admit when he had difficulties. Prof R, who taught Daniel in Shape of Space, put it this way: "When Daniel got stuck, which was often, (a) he was smart enough to ask questions, and (b) in the end, I think he had a deeper understanding of a lot of material than the other students who rushed through it!"

Daniel had many opportunities to learn new mathematics and see how different areas of mathematics are related and connected. We hope that Daniel left MathPath even more excited by the wide world of mathematics than when he arrived. He continues to be a member of the growing family of MathPath alumni. We know that he has formed valuable relationships at MathPath and we encourage the maintenance and strengthening of these connections. The enriching environment of MathPath would not have been the same without Daniel.

Thanks and best wishes to you and to Daniel in his bright mathematical future.

Sincerely,

The MathPath 2024 Staff