ROSS COUNSELOR APPLICATION

SEAN RICHARDSON

(1) I can attend all days of the U.S. program (June 20-July 31), and all days of the relocated Asia program (July 5-August 7) if the dates stay approximately the same. I would enjoy working at either program.

(2)
- Legal name: Sean Richardson
- Gender: Male
- Birthdate: 09/24/1998 (21 years old).
- My hometown is Portland, OR and I attended high school at La Salle Catholic College Preparatory in Portland, OR.
- Email address: seanhrichardson@gmail.com

(3) Citizenship: U.S.

(4) Education: Lewis & Clark College in Portland, OR.
(Dates: *September 2016 — May 2020 expected*).
Bachelor of Arts in Mathematics and Computer Science.
Bachelor of Arts in Physics.

(5) As a high schooler, I did not participate in any math camps or math competitions. However, I did compete in the 2018 and 2019 Putnam competitions. I scored 20 points this past competition, which is not outstanding, but perhaps shows I have some familiarity with olympiad style techniques, topics, and approaches. Further, I have three years of experience in working as a peer tutor at the math resource center at Lewis & Clark and experience grading for math and physics classes, including discrete mathematics.

(6) I plan on applying to graduate schools in mathematics this coming fall where I will likely study differential geometry, topology, optimization, or perhaps something else that peaks my interest. I enjoy teaching, so working towards professorship would be ideal, but I will reassess my interests and career goals after completing graduate school.

(7) I have done formal course work in both number theory and abstract algebra. Specifically, I am currently taking the second semester of a year-long sequence in abstract algebra at Lewis & Clark College, and I took a number theory course in the Budapest Semesters in Mathematics 2019 Summer Program. In looking at the Ross number theory topics, I have had course work in every topic up to and including the "finite fields" section. I also seen Minkowski's theorem and the geometric proofs of the two square and four square theorems in my BSM number theory course. I believe I am

mathematically experienced enough that I could learn the few topics I am unfamiliar with quickly.

(8) I find differential geometry interesting especially in connection to physics. Recently however, I have gotten interested in topology, which appears to be full of rich and complex questions stemming from simple definitions.

I have done research in differential geometry studying the Laplace equation on orbifolds. In fact, I published a paper with my advisor: "You can hear the local orientability of an orbifold" in the journal *Differential Geometry and its Applications*. I am also in my second semester of an independent study on topological K-Theory. While I am far from ready to do any research in this area, I am practicing my ability to read and understand graduate level material.

(9) While I am naturally more reserved, I can still be welcoming, social, and enthusiastic when the situation calls for it.
Through my time on the Lewis & Clark cross country team, I have had plenty of practice welcoming new members and making them feel at home before they have settled into college life. Similarly, I would often host prospective high school runners interested in coming to Lewis & Clark and make the high schoolers feel comfortable in a new environment.

While I have had not had any formal experience or training in helping people work through personal crises, my friends regard me as a good person to talk to and I am confident that I could offer a helpful conversation and perhaps some guidance to a high schooler that is working through something.

Additionally, I have worked at the mathematics tutoring and resource center at my college, giving me experience in providing encouragement and guidance in mathematics situations.

And, I am certainly eager to give impromptu math lectures to interested students. In fact, after all the complaints from friends and family, it would be a pleasant change to lecture to an interested audience!

(10) Interests and hobbies:
Outside of academic work, I have a passion for distance running! I find running relaxing and refreshing, but I am also drawn to the competitive nature of running and the need for self improvement. I have compete on the Lewis & Clark cross country and track teams for four years and I currently run 70 miles a week; I hope to continue running after graduating and perhaps work towards marathon running.

I also have an interest in chess! I only casually play chess and rarely study chess formally, but I recently helped found the Lewis & Clark chess club and I am always up for a game of chess.