To whom it may concern;

This year so far, our project has been to investigate a question posed by Erdös: “Given three distinct primes- If we construct a sequence of all the products of their powers, with the sequence arranged in increasing order, is it true infinitely often that consecutive terms in this sequence are both prime-powers?” We have used Python to explore the question numerically, come up with many different geometric interpretations to visualize the problem, as well as explored algebraic manipulations of the numbers. We eventually proved that the theorem does in fact hold for two primes, which felt like quite an accomplishment. A huge central part of our project was Dirichlet’s Approximation Theorem, and we have done a lot of work with proofs involving it. My understanding of irrational numbers and how they are dense in the reals mod n has dramatically increased. This has been an invaluable learning experience for me, and I have learned that I really enjoy research. I’ve also learned that research often involves exploring many many incorrect ideas or non-working proofs until someone has the right idea, and that’s still a very fun and rewarding experience for me.

Trevor Klar