**1. What course(s) at Harvard Summer School interest you and why?**

I am most interested in taking one of the higher-level, mathematics-based courses such as Game Theory and Strategic Decisions, The Mathematics of Symmetry: Introduction to Abstract Algebra, or The Queen of Mathematics: Introduction to Number Theory. The reason for my interest in this field in particular is most likely the math course I currently take, AP BC Calculus, because it is the first math class that has significantly challenged me in a long time. I love the process of discovering or proving a theorem in a creative way and then applying it in an unexpected manner, and in my current math class both of these processes happen on a daily basis. The class is taught in a unique format in which the students go at their own pace (while turning in problem sets) through a series of texts explaining certain concepts while prompting the students to establish the basis for them in the form of proofs. This format has been especially conducive to the growth of my interest in math, as before I found it somewhat slow and dull.

The three courses above interest me because I have read enough about those subfields of math to know how powerful and interesting the concepts and their applications can be, yet I have never had the opportunity to take courses on them and likely will not until college. Out of all of the three, the one I would most like to take is the one centering on number theory. Since elementary school, I have encountered various problems regarding integers and prime numbers that appear impossible without the use of the guess-and-check approach (which is not satisfying at all because it completely disregards the deeper trends at play among the integers). The relative frequency of these problems as well as their fundamentality suggests that number theory is a field of great importance to the study of the rest of math, so I would love to study it in order to gain a foundation for the study of more higher-level math.

**2. Reflect on a book you have read or a film you have seen where you strongly related to a character. State and describe the character, their traits and significance, and how they personify you.**

After first meeting Jay Gatsby in the introduction of Fitzgerald’s *The Great Gatsby*, I found this seemingly-one-dimensional character to bear little resemblance to myself. However, as the book began to reveal his true personality, I increasingly related to him. Gatsby’s determination to marry a woman of a higher social class and impress her through the acquisition of immense wealth demonstrates that he is very ambitious. This ambition is a double-edged sword for Gatsby; as a result of it, he achieves the impossible and becomes fabulously rich, but he also cannot be content because he still has not fulfilled his romantic desires. I too am often affected similarly by ambition. Throughout high school, there have been times where I have taken on too many activities at once (such as scheduling multiple debate tournaments, model UN conferences, and ethics bowl tournaments within the same month) or attempting to carry out a very interesting, yet challenging and time-consuming, concept for a class project. While this ambition has helped me accomplish more than I otherwise would have, it has often left me unfulfilled because I was not able to excel in every single one of my undertakings.

Additionally, both Gatsby and I sometimes close off ourselves to the outside world. Gatsby maintains (or at least leaves untouched) a shroud of mystery surrounding his background and true motivations. As a result, while many attend his parties and claim to know him well, most misunderstand him and cannot make many genuine social connections with him that might have altered his warped perception of his romantic odds, thus leaving him ignorant of reality. While I certainly do not think that I shield myself from the world to the same extent, I do sometimes bury feelings of stress or panic when my ambition does get the best of me and I am in a position in which I have much to do. This tendency is at times a detriment, as talking through my stress might help to alleviate it.

**3. Describe an event or a person who has greatly influenced you and why.**

Middle school was very easy for me. I never had to study for tests or work particularly hard on projects in order to receive an acceptable grade. As a result, by ninth grade I had developed awful study habits by the time I entered high school, particularly in the classes that were easiest for me in middle school, math and science. These habits produced less-than-desirable results; within the first month and a half of school, I had accumulated two B minuses on Bio Honors tests and two B minuses on Geometry Honors tests. Given my relative success in middle school, I was appalled and bewildered by the situation. Up until that point, I had generally defined myself through my grades and skill in STEM fields. This identity issue proved greatly unsettling, so I resolved to find a way to correct the issue of my grades in order to put off the larger personal issue. I realized the root of the problem (my lack of strict studying habits) and corrected it. Through this solution as well as some extra work, I eventually raised my grade in both classes up to an A by the end of the semester.

While I learned how to effectively study and exert the appropriate amount of effort for more difficult classes, the most significant result of my unsatisfactory start to high school was the creation and resolution of the questions regarding the relationship between my grades and identity. After my grades stabilized, I decided to explore new activities offered by clubs and the fine arts department in the second semester of freshman year. I became more interested in choir. I worked at the local food bank on Saturdays. I joined the MicroFinance and Young Liberal clubs. I began to explore computer science outside of the classroom. This early period of high school provided a foundation for the rest of my high school career in that it exposed me to people and activities with which I otherwise would not have come into contact, and ultimately I am thankful for the initial struggles that launched it.

**4. You are tasked with creating a high school course of your choice. Tell us the name of the course, the description, and why you chose to create that particular class.**

“Now we would delve deeper into this subject, but you need a stronger mathematical background in order to completely understand it.” Much to my dismay, my computer science teacher utters this phrase about once during every new unit. This is because my computer science class does not have any math classes as prerequisites; as a result, the curriculum at times is significantly restricted, which greatly irks me when we do not continue to discuss topics such as sorting or networks of linked lists that I find incredibly interesting. Therefore, if I were to create a high school course, I would create a Computer Science Theory course that would have at least BC Calculus as a corequisite.

Much like my current computer science class, this course would explore algorithms in a variety of topics. Examples of such topics include computer graphics/image processing (which requires the use of 3-dimensional calculus), optimization (which uses elementary calculus topics such as Fermat’s theorem regarding extrema), robotics (which requires calculus-based physics in order to model physical movements), as well as algorithm analysis (e.g. discussing Big O analyses of algorithms from a mathematical standpoint). In addition to traditional computer science assignments such as developing programs that accomplish a certain task via a specific algorithm, students would also be tasked with proving the efficiency of algorithms and developing related algorithms themselves.

Although classes such as this one exist in college settings, it would be extremely useful for students to get a head start on such advanced topics in high school. Although there are many who would not yet have the mathematical background to complete such a course, it would be valuable for those who do have the knowledge to complete it. Additionally, (at least at my school) there are no advanced computer science courses, and this would allow students to build upon what they had learned in previous courses before college.

**5. Have you ever incurred serious or repeated disciplinary action, or have you been suspended? If so, please explain. (If new circumstances alter your status at school after you have submitted this form, you must notify us as soon as possible.)**

I have never incurred any serious or repeated disciplinary actions (including suspensions).

**6. Would you like to provide any additional information?**

No.