

The following are high-scoring essays from previous years and their corresponding prompts. We are providing these to show an example of the high writing level that we are looking for; and inspire you to meet or exceed these expectations.

Note: the rubric and prompts for these essays are different from this year's. Carefully review the current rubric and prompts before writing your response. We are looking forward to reading your unique voice and writing style in your essays. Plagiarism of another's work or using AI assistance will result in disqualification.

Think of a moment when you felt proud of yourself. In 500 words or fewer, describe what steps you took to get there, lessons you learned, and how you will apply them in your future life.

Early morning rays fall upon a classroom rife with bodies tensely huddled around a flashing computer. Our group all watched in anticipation as I pressed the various keys. The character progressed through the various levels, until it finally hit the end, telling us, "Game over!" All three of us sighed out a breath of relief. Our labor at long last had led to my most profound achievement: a finished video game. I discovered the video game design competition in my junior year of high school, a way for me to challenge myself and confront my limits. One might say, "A video game? What use is that?" but there are so many components to a video game that are often overlooked, and it taught me so much as a student. Beyond coding, one needs to be creative, adaptable, and to think outside of the box.

My team was clueless on how to even start; from choosing a game engine to coding asset functions, we carefully researched over many sleepless nights. It was something so far out of my comfort zone; I felt simply overwhelmed by the task before me, like I was jumping into the deep side of the ocean. Yet I reveled in the experience, learning different techniques from various trials and errors in the coding of the game. Every failure was just another step towards success, and I took pride in knowing that I was constantly learning and applying my expertise in experimental ways.

Instead of letting the stress get to my head, I learned to manage it and use my frustration towards productivity rather than needless conniption. In another sense, finishing this video game was a testament to myself of my endurance and perseverance in strenuous situations. Through the struggle, I sharpened my attention to detail and overcame constant setbacks. I needed to think outside of the box and push myself into new and unfamiliar territory, both creatively and technically.

As I pushed through each day of work until the finishing touches, I developed my endurance and preservation. Furthermore, my leadership and communication skills were shaped to lead others in future projects, whether that be in school or in my future career. Despite not reaching our final goal of getting 1st at the state-level competition, I was still content with myself. The experience has led to epiphanies in my coding education and career. These kinds of skills have helped me become a more resilient person, which has helped to prepare me for other aspects of my life. This was one of the most profound foundational steps into the world of computer science, a field I want to pursue in the future; whether it was developing an educational game for learners or a groundbreaking app to benefit those in need, I strive to make a difference in the future. This experience continues to be one of the most significant achievements in my life: it has broadened my horizons and let myself grow in areas that I discovered myself lacking.

**Briefly describe a problem related to a field you're interested in. Then, in detail, describe the most promising solution(s) and why they stand out. Address limitations or counterarguments. Response must be 500 words or less.**

The medical field is an intricate area of expertise dedicated to helping people and relieving pain. It is centered around compassion and empathy, using knowledge and technical skills. Since their discovery in 1928, antibiotics have been essential in treating bacterial infections. However, misuse and overprescription have led to the rise of antibiotic resistance, a growing global threat with increasing death tolls and limited treatment options.

Antibiotic resistance is the process by which a strain of bacteria becomes immune to antibiotics. This means that the bacteria can no longer be killed by antibiotics. Antibiotic resistance is an issue because it makes infections harder to treat and increases the risks involved during and after medical procedures and treatments.

A promising solution against antibiotic resistance is CRISPR-based antibiotics. CRISPR stands for Clustered Regularly Interspaced Short Palindromic Repeats. This is a natural part of the immune system in bacteria that they use against viral infections. CRISPR is a type of molecular scissors that can cut up and edit DNA at specific locations. This is used in antibiotic resistance to specifically target and eliminate antibiotic-resistant bacteria or disable the genes responsible for resistance. Scientists isolate the CRISPR system to target specific genes within bacteria and deliver it via bacteriophages or viruses that infect bacteria. Once it is within bacteria, CRISPR can target and disable vital genes, effectively killing them. This can also target bacteria by disabling the resistance genes. CRISPR is unique because it can store short repeated sequences of DNA that act as a memory, so once it is within bacteria it can target the specific resistance genes. This is a big deal because once the resistance genes are disabled other antibiotics like penicillin or amoxicillin can once again be effective. Scientists have successfully used CRISPR-equipped phages to kill drug-resistant E. coli and remove resistant genes in *Enterococcus faecalis* during lab experiments, showing the effectiveness of CRISPR.

CRISPR-based antibiotics face key challenges, including delivery limitations, bacterial resistance, and ethical concerns. Bacteriophages, the primary delivery method, are not always efficient. This prompts the exploration of lipid nanoparticles as an efficient delivery system. Bacteria may develop resistance to CRISPR, yet multi-targeting strategies and periodic modifications can prevent this. Extensive safety trials and ethical oversight are also necessary. Despite these challenges, ongoing advancements are refining CRISPR's precision and delivery, making it a promising solution against antibiotic resistance with the potential to revolutionize modern medicine.

Despite the presence of some challenges, CRISPR is emerging as an incredibly effective tool against antibiotic resistance. According to the CDC, antibacterial resistance is killing at least 1.27 million people worldwide. This is a world-threatening issue that needs a solution. Saving lives and improving quality of life are the cornerstones of medicine. Antibiotic resistance threatens that, but CRISPR-based antibiotics will be used to decrease that threat.