Battle of the Octanes

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The purpose of this experiment was to determine which octane rating of fuel burned longest. My hypothesis was that if I tested two different octane ratings from two different gas stations with a small engine, the highest-octane rating would burn the longest. The experiment was conducted by purchasing one gallon of 87-octane and 89-octane from Circle K and Chevron and then obtaining a four-stroke Honda engine to burn the fuel. Once I had everything I needed, I ran the engine until it shut down to ensure the fuel inside it was used up as much as possible and then cranked it over seven times to make sure there was as little residue as possible. I did this with each fuel, adding one quart every time until the engine stopped. My results were that both fuels from Chevron outperformed Circle K fuel as Chevron fuel made the engine run longer before shutting down before the Circle K fuel. My hypothesis was confirmed because the higher octane-rating fuel lasted longer than the lower octane-rating fuel. These results lead to the conclusion that the higher the octane rating, the more time the fuel will last. This can apply to daily use because everyone wants the fuel in their cars to last longer as fuel is increasing in price today. For future research, I could do more extensive experimentation on more applications, such as a car, and testing driving patterns to get more precise data on fuel consumption.

Awards Won:
University of Arizona: Renewal Tuition Scholarship