



**CALIFORNIA STATE SCIENCE FAIR
2010 PROJECT SUMMARY**

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| Name(s) Gathenji B. Njoroge | Project Number J1914 |
| Project Title Reflection Detection | |
| Objectives/Goals To determine which airplane will reflect the least amount of light. The three airplane models are the B-2 spirit airplane model, the Boeing 767 model and the F-35 joint strike fighter. | |
| Abstract I believe that the B-2 spirit airplane model will reflect the least amount of light. I believe that the Boeing 767 model will be in second place, while the F-35 joint strike fighter will reflect the most light. | |
| Methods/Materials Using Titebond wood glue, scissors, paper, and a ruler make three of each type of plane. Get a large box and cut a hole in it, to fit the LED flashlight. Fit the flashlight into hole in box. Underneath the flashlight, tape the sensor of the Lux meter. Tape LCD of the Lux meter outside the box. Build a stand for the planes to be on during the testing. The bottom should be made of a square piece of Styrofoam that is glued to the bottom of the box. Sticking up from the Styrofoam are four straws, one in each corner. Use a laser level to make sure the straws are all straight. Paint inside of box black using Asphalt undercoat spray paint. Place plane being tested on the stand. Turn on Lux meter and close box. Turn on flashlight and record reading that is observed on the Lux meter. Test all nine planes and record all the observed readings. | |
| Results I conducted the experiment a total of twenty-seven times and in all these experiments, the B-2 spirit airplane models reflected the least amount of light. On average, it reflected 10 lx. The Boeing 767 reflected an average of 15 lx. The F-35 Joint Strike fighter plane reflected an average of 30 lx. The experiment was fair. All planes were tested under the same conditions. | |
| Conclusions/Discussion My hypothesis was proven correct. The B-2 spirit airplane model reflected the least amount of light because it has a slim body and very few angles for the light to bounce off. The Boeing 767 model was second because it only has one vertical stabilizer. The Boeing 767 also does not have a big engine on the back. The F-35 joint strike fighter reflected the most light because it has two vertical stabilizers, two air intakes, and a large engine at the back. If I did this experiment again, I would use a different colored light, so that I could determine whether it would reflect light differently. | |
| Summary Statement The purpose of this experiment was understand how airplane shape affects the way it reflects light. | |
| Help Received My Mom bought me the Lux Meter, took me to the library, and proof read my project. My dad helped to spray paint the box and hold the box cover down as I took the readings. | |