| Name(s) | Project Number |
|---|---|
| **Michael M. Steel, II** | |
| | 36260 |

**Project Title**

## Stealthy Shapes: What Geometric Shapes Scatter the Most Electromagnetic Energy?

**Abstract**

**Objectives/Goals**
The objective of this study is to determine which of eight 3-D geometric shapes scatters the most light, by using a lux meter to measure reflected light.

**Methods/Materials**
Black-paper lined cardboard box, lux meter, led flashlight, various paper shapes.

**Results**
The shapes in order from ones that scattered the most light (reflected least light) to scattered least light (reflected most light) are:

Black Flat Face (54.07 lux Average)
2-inch V-Shape (114 lux average)
4-inch V-Shape (261 lux average)
2.5-inch W-Shape (699 lux average)
Crumpled Cylinder (844 lux average)
Cylinder (858 lux average)
1- inch WW-Shape (919 lux average)
3.5-inch W-Shape (946 lux average)
Flat Face (1297 lux average)

**Conclusions/Discussion**
It turned out that my hypothesis was partially correct. Both of the V-Shapes reflected much less light than the shapes without sharp edges such as the cylinder and flat face. However, I found that the W-Shapes and the WW-Shape reflected about the same, or more light than the cylinder, although all were less than the flat face. I discovered that it really depends a lot on the distance between the peaks on the shapes. The wider the shape was, the more light it reflects back.

**Summary Statement**

I showed that the amount of light reflected from an object depends on the shape of the object.

**Help Received**

I designed, built, and performed the experiments myself. My Physics teacher loaned me a lux meter for taking measurements.