

### Abstract

My science fair project was on holograms. The purpose of this experiment was to build and test holograms to determine which hologram type is the clearest, easiest to make, and most consistent. My hypothesis was if I build the three hologram models (hologram pyramid, Pepper's Ghost, and transmission hologram), I thought that they would all work because I had done my research. I had studied them all and could apply that knowledge when I was building the different models. I thought that the hologram pyramid would be the clearest, the easiest to make and most consistent. It has simple instructions, does not need many requirements to work, and has four reflections, so it should be brighter than the ones with just one reflection. There were 4 different types of holograms, I will give a very brief description on how to build two of them, the Pepper's Ghost diagram and the parabolic mirror hologram. I built the Pepper's Ghost diagram by building two rectangular rooms that together form a backwards "L". The L had a piece of glass through the only line of symmetry in the structure. I lit up the room on the side, put an object inside and looked through the glass at my ghost image. To build the parabolic mirror hologram I needed 2 concave parabolic mirrors. I cut a circle at the top of one of the concave mirrors. I put an object inside the other concave mirror, then placed the mirror with the hole on top of the second concave mirror to form a dome shape. I also tested these two and they work as long as there is some form of light. My purpose was achieved and my hypothesis was also supported. I knew my purpose was achieved because I did end up building and testing the hologram types. I knew my hypothesis was supported because they all did end up working properly. I also was right about the Pepper's Ghost Hologram being the clearest, easiest to make and most consistent based on the results of the tests that I did.