



**CALIFORNIA STATE SCIENCE FAIR
2006 PROJECT SUMMARY**

Name(s) Victoria N. Hutchins	Project Number J1515
Project Title Navigating the Sky with My Telescope: Do the Planets Revolve Around the Earth or the Sun?	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals The object of this experiment was to observe the phases of the Moon and Venus and to determine if the planets revolve around the Earth or the Sun.</p> <p>Methods/Materials I observed Venus for three months every other week and the Moon twice a week for one month. I sketched my observations of the Moon and Venus to scale. I also modeled the geocentric and heliocentric system with a Styrofoam ball and light bulb to compare with my observation of the Moon and Venus. I built a telescope to use as a tool for my experiments. For the telescope I used a cardboard mailing tube, a coffee can, a plastic vacuum tube, a cardboard spool, objective and eyepiece lenses, duct tape, black spray paint and a camera tripod.</p> <p>Results The apparent diameter of Venus increased approximately three times in three months with decreasing percentage illumination. The apparent diameter of the Moon was almost constant over one cycle. Both the Moon and Venus go through a complete cycle of phases. The Magnification of my telescope is 38.5x.</p> <p>Conclusions/Discussion I determined that the full cycle of phases of Venus doesn't exist in Ptolemy's geocentric system and has only new and crescent phases. My observations didn't support Ptolemy system. I determined that in Aristotle's geocentric system, Venus would have complete phases, but the apparent size would not change much. My observations of Venus matched Copernicus' heliocentric system because the apparent diameter increases as the percentage illumination decreases. My observations of the Moon matched the geocentric system because the apparent diameter remains the same over one cycle. I determine that the planets revolve around the Sun not Earth because my observations of Venus matched better with the heliocentric model than the geocentric model.</p>	
Summary Statement Through my experiments and observations, I proved that the planets revolve around the Sun.	
Help Received Dr. Pimol Moth provided support with my research and experiments. Hartnell College provided reflecting telescope for my observations of the Moon and Venus. Mr. Ed Allen donated objective and eyepiece lenses for my telescope. My parents provided transportation.	