



CALIFORNIA STATE SCIENCE FAIR
2011 PROJECT SUMMARY

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| Name(s) Macayla S. Ayers | Project Number 31775 |
| Project Title Beginning Cartography | |
| Objectives/Goals The objective is to see if one could accurately measure the heights of various mountains using a transit and trigonometry. Methods/Materials Using a transit the angles of four different mountains were shot. Once the angles and distances (obtained from a GPS) were known, they were substituted into the formula $\text{tangent angle} = \frac{\text{the opposite leg}}{\text{the adjacent leg}}$ and the heights of the mountains were then calculated. After doing the math, the approximate heights found were then compared to the known altitudes determined by a GPS. Results The heights of all four mountains were calculated and only one mountain was accurate, having the same known and calculated heights, the other three mountains were off by a hundred to a few hundred feet. Conclusions/Discussion My conclusion is that with more accurate equipment one would be able to accurately measure the heights of mountains within a 95% accuracy. | |
| Summary Statement This project was conducted to discover if the height of a mountain could be accurately measured using a transit and trigonometry. | |
| Help Received My Dad taught me how to use the transit. My Mom helped me with the layout of my board. My uncle tutored me in trigonometry. | |