



**CALIFORNIA STATE SCIENCE FAIR
2013 PROJECT SUMMARY**

Name(s) Jaime Kvaternik	Project Number J0805
Project Title The Effects of Water Depths on a Wave's Velocity	
Abstract Objectives/Goals The objective of this project is to see how different water depths can affect a wave's velocity. Methods/Materials One tank of water is filled with water after many tests and trials. For more accurate data, a contraption was constructed with some construction tools. A block of wood is then dropped from a specific height (.5 cm) into water creating a wave. The whole experiment is filmed with a video camera, which is then sent to a computer. With movie software installed on the computer, the first wave created is timed until the same wave reaches the end. All this is written down in a lab book. Results As shown above, the wave velocity will increase if the water level is deeper. The 1cm water level times are in the 1-.7 second range. Then the 2cm water level ranged in .9-.7 seconds. The 3cm water level ranged between the .7-.5 ranges, while in the 4cm water level was in the .6-.5 second ranges. The wave velocity range for the first few depths were about ten, but then the range between the 3cm depth (73) and 4cm depth (97.9) basically doubled. This data also shows that the average time across test for each water level was relatively similar. Also the first three average times across water depth trials were again going down by ten, but then for the 4cm water level went down by about twenty. Conclusions/Discussion My data did support my hypothesis for this experiment. Waves in shallow waters slow down, and decrease their wavelength. As waves move towards shallower waters they start to feel the ocean floor. In a process called shoaling, this causes the wave orbitals to flatten as the bottom shoals. The height of a wave starts to decrease when feeling the water, but later will steadily increase until it reaches the shore, where the water will become unstable and break (Santa Aguila Foundation, 2012).	
Summary Statement My project is about how different depths can change a wave's velocity greatly, due to shoaling when reaching shallower water instead of when at a deeper water depth is slips like a skater on ice.	
Help Received Father helped edit experimental procedure.	