



CALIFORNIA SCIENCE & ENGINEERING FAIR 2019 PROJECT SUMMARY

Name(s) Lila Ekholdt	Project Number J0108
Project Title Panel Potential	
<p style="text-align: center;">Abstract</p> <p>Objectives The objective of my project was to determine if different panel structure/designs on a soccer ball had an effect on the distance the ball traveled in the air. My hypothesis was that the 6 panel ball with the newest design would travel the farthest out of the 4 balls I tested, (6, 8, 18, and 32 panel balls).</p> <p>Methods I constructed a catapult with various lengths and sizes of wood and I attached a slingshot to the structure to form the catapult. I also modified a saw horse to form a launch pad to ensure that the tension of the catapult would be consistent every time (angle and length). All four balls were the same size, same air pressure, and any soil and grass would be wiped off before every launch to keep the same variables. I did 4 trials each trial having 100 launches and each ball having 25 launches per trial, (balls were randomly chosen to be launched). I recorded each launch using a 100-foot measuring tape laid out and a stake placed at the exact first bounce. All trials took place in the same location, (wide open field in backyard).</p> <p>Results The 32 panel ball traveled an average of 60.62 feet and traveled the farthest average. The 6 panel ball traveled an average of 57.90 feet. The 18 panel ball traveled an average of 56.18 feet. The 8 panel ball traveled an average of 55.98 feet and traveled the least average distance. The 18 panel ball and the 8 panel ball are virtually identical in average distance, separated by 2 tenths of a foot.</p> <p>Conclusions My project helped me discover the elements of aerodynamics and how the properties of an object have a big impact on its flight. My project made me look at a ball completely differently. It showed how panel number and design can make a big difference on the ball's flight and aerodynamics. Many people such as referees, soccer players, coaches, and maybe even brands may be interested in the fact that a different ball could mean different flight.</p>	
Summary Statement Using a catapult and 4 different paneled soccer balls (6, 8, 18, and 32 paneled balls) I showed that aerodynamics including drag and lift are found within the ball's panels.	
Help Received I received help from my dad when using heavy cutting tools, designing/constructing the catapult, and he assisted me with launching the balls.	