



# CALIFORNIA SCIENCE & ENGINEERING FAIR 2019 PROJECT SUMMARY

<b>Name(s)</b> <b>Brady Hickman</b>	<b>Project Number</b> <b>J2011</b>
<b>Project Title</b> <b>What Brand Is a Hit?</b>	
<p style="text-align: center;"><b>Abstract</b></p> <p><b>Objectives</b> The objective of this study is to determine which brand of baseballs will travel a further distance when hit off of a tee with the exact same bat velocity.</p> <p><b>Methods</b> Seven different brands of baseballs, baseball tee, tape measure, flags to mark distance, screwdriver to dig hole for flag stem, homemade "regulator" built with my dad to create a swing that would produce the exact same bat velocity for each swing, long bolts to secure "regulator" to ground, and hammer. After the experiment, each baseball was cut in half with band saw. Measured the distance of ten different hits for each brand of baseball.</p> <p><b>Results</b> The Pronine baseball traveled an average of almost exactly 83 feet. The second place, Spalding, and third place, Rawlings, brands were hit 1 ½ to 7 inches shorter on average. The remaining brands (Diamond, Champro, Wilson, Dick s Sporting) traveled 1 to 5 feet shorter than Pronine. After conducting all seventy hits and calculating their average distance hit and standard deviations, each ball was cut in half to examine its composition. Although each ball was sold locally as an official league baseball, their compositions were different. Pronine went the farthest and was the only baseball with a core mostly made of rubber. Dick s Sporting Goods brand only traveled an average of approximately 77 feet and came in last place. This baseball s core was made from cork. The remaining brands were made consistently of string, rubber and cork. Five feet can be the distance separating a home run from an out!</p> <p><b>Conclusions</b> Pronine baseballs were very consistent in the 80-foot range by hitting 80 feet or further seven times out of ten. Spalding, Rawlings, Diamond baseballs also were hit consistently over 80 feet, yet not as far as Pronine. Pronine traveled the furthest at 92 3 . Pronine, Spalding, Rawlings, and Diamond are very consistent at hitting the baseball 80 feet or further. Champro, Wilson and Dick s Sporting were not very consistent. If you desire a very consistent baseball, then you should consider using Pronine. If you are playing at a small baseball field, then you might think Wilson or Dick s Sporting Goods baseballs would benefit your situation best. Knowing the average distance a baseball is hit will allow a consumer to make an educated purchase. My hypothesis was incorrect, yet I gained knowledge about different brands of baseballs.</p>	
<b>Summary Statement</b> I discovered that the brand of baseball and its unique composition determines the average distance it can be hit.	
<b>Help Received</b> My dad and I researched a design and built a "regulator" using wood, Lazy Susan hardware, bat, and clamps to create a consistent "swing." My grandpa and I cut each baseball in half. My mom taught me how to calculate standard deviation.	