



**CALIFORNIA STATE SCIENCE FAIR
2007 PROJECT SUMMARY**

Name(s) Joshua B. Larky	Project Number J1822
Project Title The NBA Takes a Bad Bounce: Evaluating Leather vs. Synthetic Basketballs	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals My objective was to test leather and synthetic basketballs in an effort to evaluate grip and bounce consistency. My interest was ignited by the recent controversy in the National Basketball Association (NBA) over the introduction of the new synthetic ball, in place of the traditional leather basketball. I hypothesized that since the players perspire during play, the balls might show greater differences when wet versus when dry. I further hypothesized the dry leather basketball would bounce higher when dry, and not roll as far as a synthetic basketball. I expected the wet synthetic basketball would bounce higher than the leather ball.</p> <p>Methods/Materials I measured how high each basketball bounced and calculated the standard deviation to assess the variability of the basketballs# performance. I bounced the basketballs from heights of 100cm (1 meter) and 200cm (2 meters). I set up a roll test to investigate the basketballs# ability to grip to the ground and the friction associated with each basketball#s particular surface. This test was accomplished by rolling the basketballs down a ramp and measuring the distance rolled. I performed all of these tests with both wet and dry basketballs, for a total of 480 tests. Bounce tests comprised 320 of the total, and roll tests accounted for 160 tests.</p> <p>Results When bounced from 200cm, both wet and dry, the synthetic basketballs had much higher standard deviations than the leather balls. Results at 100cm, both wet and dry, showed similar standard deviations for leather and synthetic basketballs. Bounce heights were similar in all cases, wet and dry. When rolled, both wet and dry, the synthetic basketballs had much higher standard deviations and also rolled farther than the leather basketballs.</p> <p>Conclusions/Discussion The greater standard deviations of the rolled synthetic basketballs may indicate a less consistent grip, and the farther roll implies they are more slippery than leather balls. My test results seem to confirm the NBA players# complaints that synthetic basketballs are harder to grip and more inconsistent when compared to leather basketballs. The NBA acknowledged its mistake in switching to the new synthetic ball, and the leather basketball was put back in play.</p>	
Summary Statement I tested leather and synthetic basketballs by bouncing and rolling them, under both wet (to simulate sweat) and dry conditions, and found that the synthetic were more inconsistent, slippery, and unpredictable than the leather basketballs.	
Help Received Thanks to my father for helping me set up my tests and teaching me how to work the video camera. Thanks to my parents for help with editing my report.	