



**CALIFORNIA STATE SCIENCE FAIR
2017 PROJECT SUMMARY**

Name(s) Pilar R. Vanheusden	Project Number J1425
Project Title Artificial Turf: The Heat Is On!	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals The objective of my experiment was to figure out why turf is usually hotter than grass. On hot days when my soccer team had to play games on turf, we always complained that it got so much hotter than the grass. Why is this? What causes the turf to be hotter than grass? Is it the blades of the turf or does it have to do with the sand and infill? The fibers that make up the blades of turf are made up of thermoplastics. The infill between the blades is most commonly sand and rubber or other plastic materials. My hypothesis is that the synthetic turf will always be hotter than grass because of the tendency of the synthetic materials that make up turf to absorb heat.</p> <p>Methods/Materials The turf sample with no infill and the infill materials were laid out in an area that is open to the sun at the school next to the the turf field, grass field, and concrete basketball court. A digital and infra red thermometer was used to measure and record the temperature (in °F) of the ambient, each surface, and infill material before and after six hours of sun exposure. This process was repeated for two more days.</p> <p>Results My hypothesis was correct, the turf always got hotter than the grass. The turf got approximately 10 degrees hotter than the grass. This is because the sand and the infill in turf reached the highest temperature in comparison to the rest of the materials measured.</p> <p>Conclusions/Discussion In conclusion, the turf's temperature will always be hotter than grass due to the infill materials that absorb more heat. The grass doesn't get as hot because it absorbs and retains more water and so it takes more heat to evaporate the water. This experiment would have been much more controlled and accurate if the experiment took place in a controlled heat chamber so each day the the temperature would be the same. Turfs offer a lot of advantages like low maintenance and low water usage and are commonly used and so although they tend to get hotter than grass there are ways to avoid playing on a hot turf field.</p>	
Summary Statement I showed that turf gets hotter than grass due to the synthetic materials that make up turf.	
Help Received I would like to thank the school for providing me the materials for my experiment.	