



**CALIFORNIA STATE SCIENCE FAIR  
2016 PROJECT SUMMARY**

<b>Name(s)</b> Tess N. Koval	<b>Project Number</b> <b>J0315</b>
<b>Project Title</b> <b>Can Papercrete Compete with Concrete?</b>	
<b>Abstract</b> <b>Objectives/Goals</b> My project was to determine whether papercrete was a good alternative building material in place of concrete. I hypothesized that concrete would be the strongest and most water resistant, and that newspaper papercrete would be the most insulating. <b>Methods/Materials</b> To make papercrete, I created two types of paper pulp, one glossy and one newspaper, and mixed them with Portland cement, sand, and water. I made the concrete by mixing Portland cement, sand, and water. I put the two different types of papercrete and concrete samples through tests to compare strength, water resistance, and insulation. <b>Results</b> I found that the concrete was the strongest, holding 84.45 times its own weight, while glossy papercrete held 40.45 times its weight, and newspaper papercrete held only 7.11 times its own weight on average. In the water resistance test, the papercrete made with glossy paper absorbed the most water, averaging 7.41% of water absorbed based on its own weight, compared to 6.80% for newspaper papercrete, and 4.63% for concrete. None of the samples were good at insulating, but the newspaper papercrete was slightly more insulating than the other samples, with a temperature change of -70.00%, versus -71.43% for concrete, and -70.79% for glossy papercrete. <b>Conclusions/Discussion</b> My hypothesis was mostly correct. Overall, papercrete was not a very good building alternative to concrete because it was not nearly as strong or water resistant. If I did this experiment again, I would focus on one test at a time, and first I would figure out how to make the strongest papercrete by adjusting the formula. I think that climate can affect how long the papercrete needs to dry, and how strong it ends up being. Another experiment could be to see if it makes a difference to the strength of papercrete if you dry it at a higher temperature, or in a less humid place.	
<b>Summary Statement</b> I found that papercrete was not a good alternative building material in place of concrete.	
<b>Help Received</b> My parents helped with getting supplies and with overseeing my experiment.	