



**CALIFORNIA STATE SCIENCE FAIR
2010 PROJECT SUMMARY**

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Project Title <p align="center">Crater Impacts</p>

<p align="center">Abstract</p> <p>Methods/Materials Materials 1) 5 pennies: to drop into materials/to resemble a meteor 2) 1 roll of tape: to tape pennies together 3) meter stick: to measure the height of drop 4) vernier caliper: to measure the diameter and depth of the craters 5) fine sand: to drop pennies into 6) coarse salt: to drop pennies into 7) flour: to drop pennies into 8) ladder: to drop pennies from 2 meters 9) straight edge: to flatten the material before and after drop</p> <p>Results Each material's data is an average from 50 drops at each height. Results from 1m Material Crater diameter mm Crater depth mm coarse salt 50.43 15.67 flour 26.26 35.07 fine sand 23.60 13.57 Results from 2m coarse salt 63.09 22.33 flour 29.43 46.62 fine sand 25.15 19.60</p> <p>Conclusions/Discussion Conclusion When I tested my problem I found that the pennies left the widest craters in the coarse salt. I think the reason for this is that since coarse salt isn't fine at all it couldn't absorb the hit well and instead the coarse salt was scattered. When the fine sand was tested though the results were very different from the coarse salt because the craters were significantly smaller in the fine sand. When I tested the flour the pennies made craters that had a smaller diameter than the coarse salt but not the fine sand, but the depth of the craters in the flour were the deepest. There may have been some error involved though, for example when I was measuring the diameter with the vernier caliper some of the material could have fallen into the crater, making it less deep. The pennies wouldn't always land flat, they would land at an angle causing the penny to leave a deeper crater than when it lands flat. When the pennies landed flat the crater would have a greater diameter since it had a more solid impact. I think that my hypothesis is mainly correct because there is a relatively distinct relationship between mass and the size of the crater. I thought that the flour would absorb the impact very well, but since the flour was so dense there were very deep craters in it. So if a meteor were to hit the Earth it would probably make the largest crater if it hit a rocky area and it would cause the least damage if it hit in a sandy area such as a desert.</p>
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<p>Summary Statement My project is about how different factors affect a crater's size, such as mass, height of drop, and the impact material.</p>

<p>Help Received Mother took pictures; Father showed me how to use a vernier caliper.</p>
