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*The Effect of Dimple Size on How Golf Balls Roll*

My science project measured the effect of dimple size on how golf balls roll. My initial hypothesis predicted dimple size, surface area friction, and roundness would be determining factors.

To investigate how dimple size affects distance and direction consistency of the ball's roll, I devised a Stimpmeter ball and ramp system to roll each ball with consistent force and energy. Nine golf balls with large, medium, or small dimple sizes were tested and measured on three different surfaces (independent variables) to determine consistency of distance and accuracy (dependent variables). Two different experiments were performed.

These experiments had interesting and complex results requiring deeper thought and research. Testing the different types of golf balls on different surfaces provided no single, clearly outstanding performing ball. As a group, the small-dimpled balls did outperform the largest dimpled balls, but not the medium-dimpled balls. The most poorly performing balls were two large dimple balls. The most consistent performers were medium-sized dimpled balls. My hypothesis of small dimpled balls rolling more consistently than larger dimpled balls was partially true, but further research revealed my original hypotheses of the reason, and about friction were incorrect.

This project provided interesting insights into how Newton's Laws of Motion, rolling friction, force, and momentum affect how dimple size affects how golf balls roll. Depending on the surface and rolling resistance, small dimples generally provide more consistent rolling distance and accuracy than large-dimpled balls. Other interesting factors were found to impact why the medium-sized dimpled balls roll more consistently.