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Truth is Stranger than Friction

The purpose of this investigation was to explore which substance (oil, graphite) reduces friction better in a low pressure, low velocity mechanical device. I hypothesized that graphite would produce the highest amount of revolutions (meters).

This experiment involved dropping a weight onto three different swing arms, A, B, and C while watching the amount of revolutions. No lubricant was used as a control. First I did 14 trials on each swing arm which all had no lubricant. Then I did another 14 trials on all three swing arms, but this time A had no lubricant, B had oil, and C had graphite. I converted all of the measured revolutions into meters using the formula $2\pi r$. To eliminate any structural variance between the swing arms, I only compared A to A, B to B, and C to C, in round one versus round two.

The data collected did support the original hypothesis. The average distance traveled by the end of the swing arm (meters) for oil was 8.41 and graphite was 10.91. Additionally, the data range (average plus and minus random error) for oil was 7.80 to 9.02 meters while graphite was 10.07 to 11.75 meters. Thus, a statistical difference does exist. These findings lead me to conclude that graphite is more efficient for a low-speed, low-pressure environment.