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Double Range With Double Counterweight

The purpose of this experiment was to test my hypothesis that if the counterweight on a trebuchet is doubled, the distance that the projectile travels will also double. I based my hypothesis on the formula $R=2(m_1/m_2)H$. In this formula, R is the range of the throw, m_1 is the mass of the counterweight; m_2 is the mass of the projectile; and H is the height of the counterweight before it drops. I tested my hypothesis by building an 8 foot trebuchet, and then using 2 different projectiles, a baseball and a softball. I decided to try increasing number of bricks in the counterweight box (from 2 up to 9) to test my hypothesis. I launched the baseball and softball 27 times each while measuring and recording how far each traveled (in feet) before hitting the ground. After I had my data, I put each set in two graphs; one showing how far each traveled based on the weight of just the bricks, the other showing the range based on the whole counterweight (the holding box plus the bricks). After analyzing my data, I discovered that when considering the box as a whole, the baseball and softball (projectile) traveled twice as far when the weight was doubled. This also confirmed the formula.