

For each collision $p_f - p_i$ should have equaled 0 and for the equal mass collision the angle between the trajectories of the spheres should have been 90° . Since, for the unequal mass collision, the target ball was lighter it made sense that the angle between the balls was less than 90° .

Reasons for error: moving clay and straw, incorrect measurements of the heights, angles, and lengths, shifting carbon paper and ramp, incorrect center of landing points identified, etc.

Conclusion:

Though there was small error in the lab, we were able to prove that momentum is conserved in a two-dimensional collision.

These results were calculated using data collected on the spheres' masses and distances. Using the table's height we were able to calculate how long it took the spheres to hit the ground as well.

Once we knew the time, velocity and in turn, momentum could be calculated. Also using conservation of momentum, we could calculate the value of a mystery mass fairly accurately.