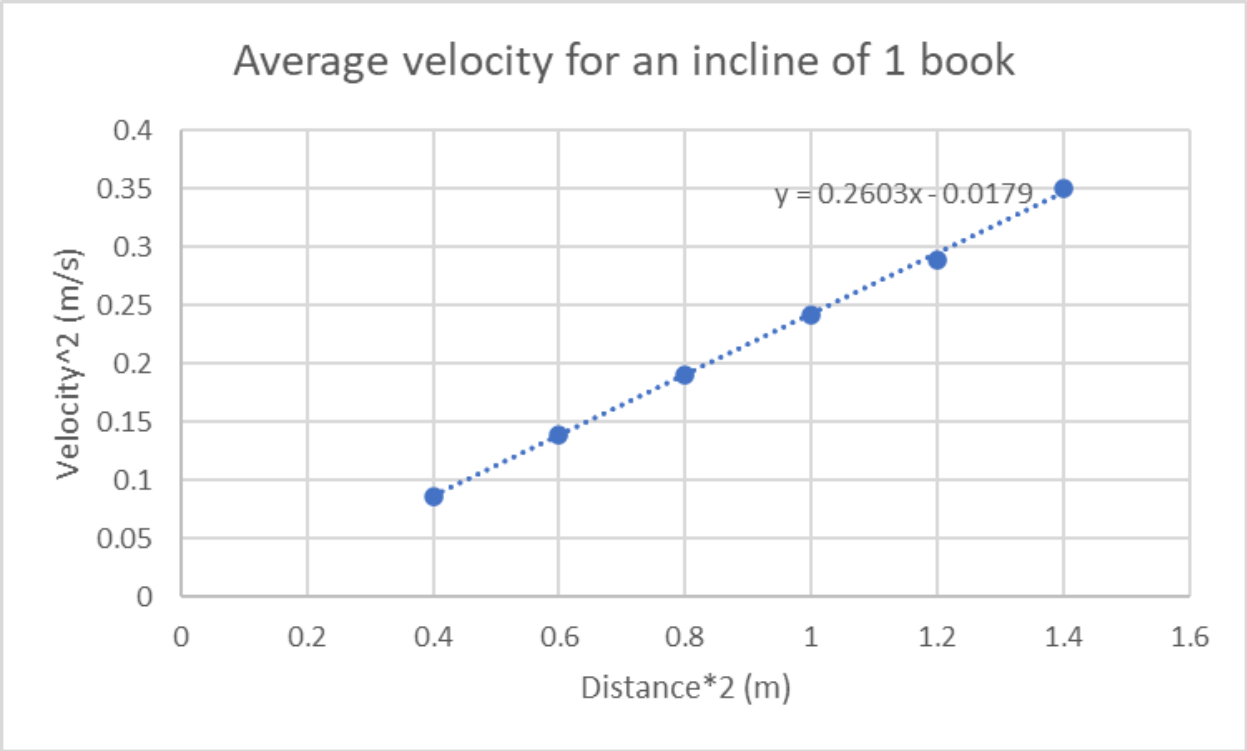
Incline 1:

The cart was measured on the ramp measuring 122 cm long (and inclined on one book measuring 4.8 cm high). The cart was released at certain distances, marked as the x-coordinates of the points on the graph.(As shown on the graph, the x value of the points were actually twice the value due to the equation used: v^2=2xa where v^2 is y, 2x is x, and a is the slope (to isolate and solve for a). The same is for the y-values being squared).

The calculated slope/acceleration is 0.2603 m/s^2. The expected value of acceleration using the formula g*sin(0) or 9.8*(4.8/122) = 0.38 (g*(height of book) / (length of ramp)). The percent error for this calculation is -32%. Possible sources for why the value for acceleration is lower are because friction was not taken into account (of both the track and the air), or the cart being old and therefore the wheels could be slower (not as smooth as a new cart).



Incline 2:
The cart was measured on the ramp measuring 122 cm long (and inclined on two books measuring 7.6 cm high combined). The cart was released at certain distances, marked as the x-coordinates of the points on the graph.(The points are similar to incline 1 as shown by the axises. The same equation was used: v^2=2xa where v^2 is y, 2x is x, and a is the slope (to isolate and solve for a)).

The calculated slope/acceleration is 0.626 m/s^2. The expected value of acceleration using the formula g*sin(0) or 9.8*(7.6/122) = 0.0.61 (g*(height of books) / (length of ramp)). The percent error for this calculation is 3.3%. Possible sources for why the value for acceleration is higher are possible changes in environment (wind) or the steeper angle could have had a greater effect than the less-steep angle had on incline 1.