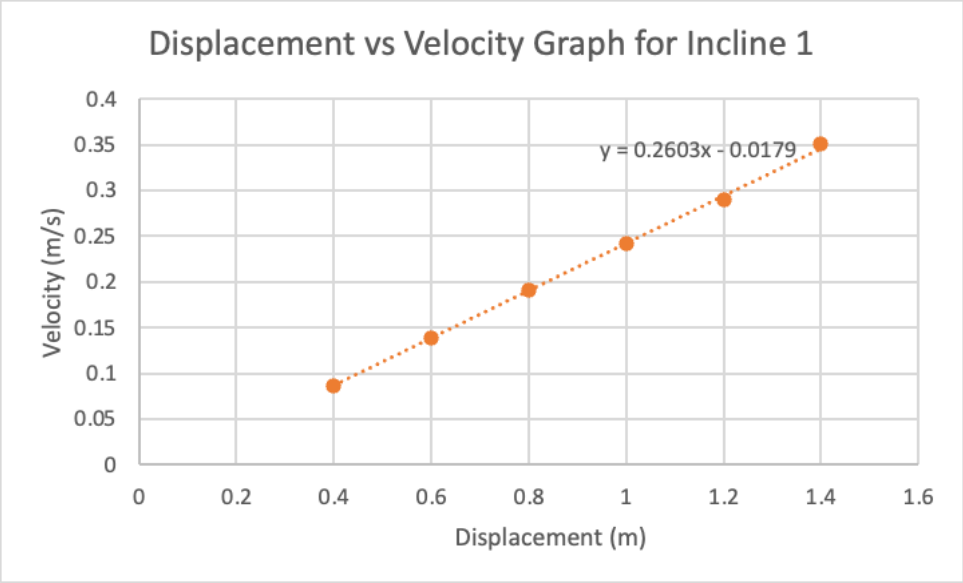
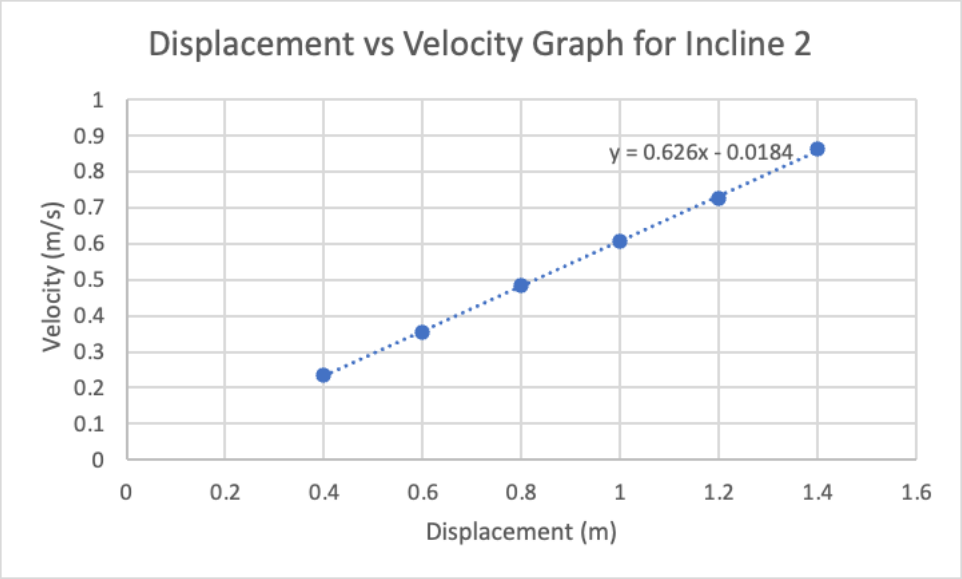
Conclusion

Results

In the first incline, the acceleration calculated was **0.39 m/s^2**. This was calculated by creating a graph of the collected data, with the x-axis representing 2 * m, and the y-axis representing v^2. Based on these units, we calculated acceleration by finding the slope of the graph.



Using the same process as explained with the first incline, the acceleration for the second incline was **0.63 m/s^2**.



It is important to note that the lines of best fit that are expressed on the graphs, need to be converted into terms of velocity and displacement. The equation for the first incline is **v^2 = 0.26 * 2 * m - 0.0179**, and the equation for the second incline is **v^2 = 0.63 * 2 * m - 0.0184**. The x and y values were manipulated in order to make the equation linear.

Analysis

It is important to compare the experimental values of accelerations to the values of accelerations obtained when using an equation. Acceleration was calculated for the two inclines as explained below:

Incline 1

1. g * sin(theta) = a
2. 9.81 * 4.8/122 = a
3. **0.39 m/s^2 = a**

Incline 2

1. g * sin(theta) = a
2. 9.81 * 7.6/122 = a
3. **0.61 m/s^2 = a**

The percent error calculated for the first incline was 33.33%, and the percent error for the second incline was -3.27%.

Points of Error

The first point of error is that air resistance was not taken into consideration in the equation a = gsin(theta). This could be a potential reason why the expected acceleration for the first incline was higher than our value after the procedure. By not accounting air resistance, there is no force working against gravity and preventing an increase in acceleration.

A second point of error could be estimations in calculations. All values were rounded to the hundredth's place and put through many equations. As a result, some values may be slightly off by a few integers. This could be a potential explanation for the difference between the expected acceleration and experimental acceleration from the second incline. Since it was off by just 0.02, this may have been due to rounding differences.