Projectile Motion Lab

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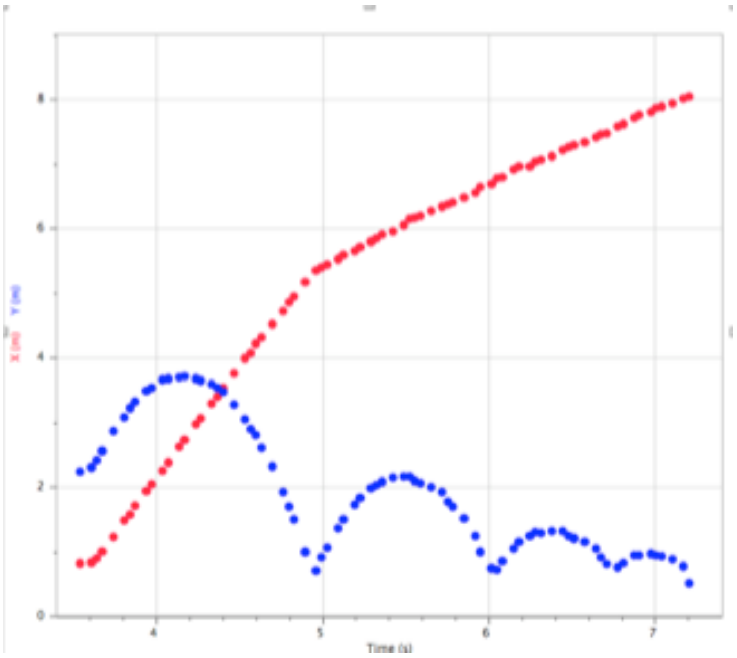
Purpose: The purpose of this lab is to analyze projectile motion using the video that we created and trying to analyze this data.

Background: Projectile motion is defined as motion without wings, propulsion, and friction under the influence of gravity (Formula: Range= Vo^2/g sin (2x)

Materials:
Laptop computer with camera attached
Logger pro software
Meter stick
Ball
Cone
Hat

Procedure:
1. Set up the meter stick by a person who is throwing the ball and use the cone to hold the meter stick.
2.Put the hat on the meter stick so that you know where the top of the stick is when the stick is so thin that it might not be visible.
3. Throw a ball and at same time, capture the video.
4. Retrieve the ball
5. Analyze the data with logger pro.
6. Analyze the graph, x velocity and y velocity gravity from s=1/2at^2

Data: These are the data that we found and analyzed with logger pro.



	VideoAnalysis				
	Time (s)	X (m)	Y (m)	Vx (m/s)	Vy (m/s)
1	3.540	0.8246	2.249	0.628	1.483
2	3.607	0.8405	2.313	1.232	2.232
3	3.640	0.9043	2.426	2.469	3.569
4	3.672	1.016	2.571	3.231	4.147
5	3.738	1.239	2.878	3.503	3.933
6	3.805	1.495	3.087	3.518	3.646
7	3.838	1.590	3.233	3.477	3.431
8	3.870	1.718	3.329	3.487	2.668
9	3.937	1.941	3.491	3.377	2.164
10	3.970	2.053	3.539	3.340	1.761
11	4.035	2.261	3.668	3.457	1.308
12	4.068	2.388	3.684	3.660	0.571
13	4.135	2.643	3.700	3.565	0.255
14	4.167	2.739	3.716	3.439	-0.172
15	4.233	2.978	3.684	3.358	-0.568
16	4.267	3.074	3.652	3.314	-0.851
17	4.332	3.298	3.604	3.402	-1.241
18	4.365	3.409	3.539	3.522	-1.944
19	4.398	3.537	3.475	3.500	-2.628
20	4.465	3.760	3.281	3.465	-3.146
21	4.530	4.000	3.055	3.351	-3.579
22	4.563	4.079	2.910	3.371	-3.807
23	4.597	4.223	2.813	3.451	-4.460
24	4.628	4.319	2.620	3.183	-4.965
25	4.695	4.526	2.329	3.184	-5.359
26	4.762	4.734	1.926	3.286	-6.030
27	4.795	4.861	1.701	3.341	-6.409
28	4.827	4.957	1.507	3.170	-6.364
29	4.893	5.180	1.007	2.889	-4.854
30	4.958	5.356	0.7168	2.344	-1.323
31	4.992	5.404	0.9265	1.666	3.284

Observation: When the ball was thrown in the air, we could see that the ball was first decreasing in the velocity and the acceleration was also decreasing, however, when it reached the top and when the ball was dropping down, I could see that the acceleration of the ball was increasing and the velocity increased as well. When the ball bounced off from the ground, the velocity again decreased but increased right after.

Analysis: Our date made sense in great way, and from the graph, you could see that the ball was bouncing off and we could also see from our graph that the velocity and the acceleration was increasing and decreasing.

Conclusion: We used the logger pro to analyze our data from the video that we had, and for the improvement of the lab, we need to see if in the future if we could use a thick meter stick so that we do not need to use hat to locate where our meter stick exist. Except for those things, our lab was great success and decent.