Konrad Kalei
Per. C

Title: Projectile Motion

Purpose: To analyze projectile motion using video analysis.

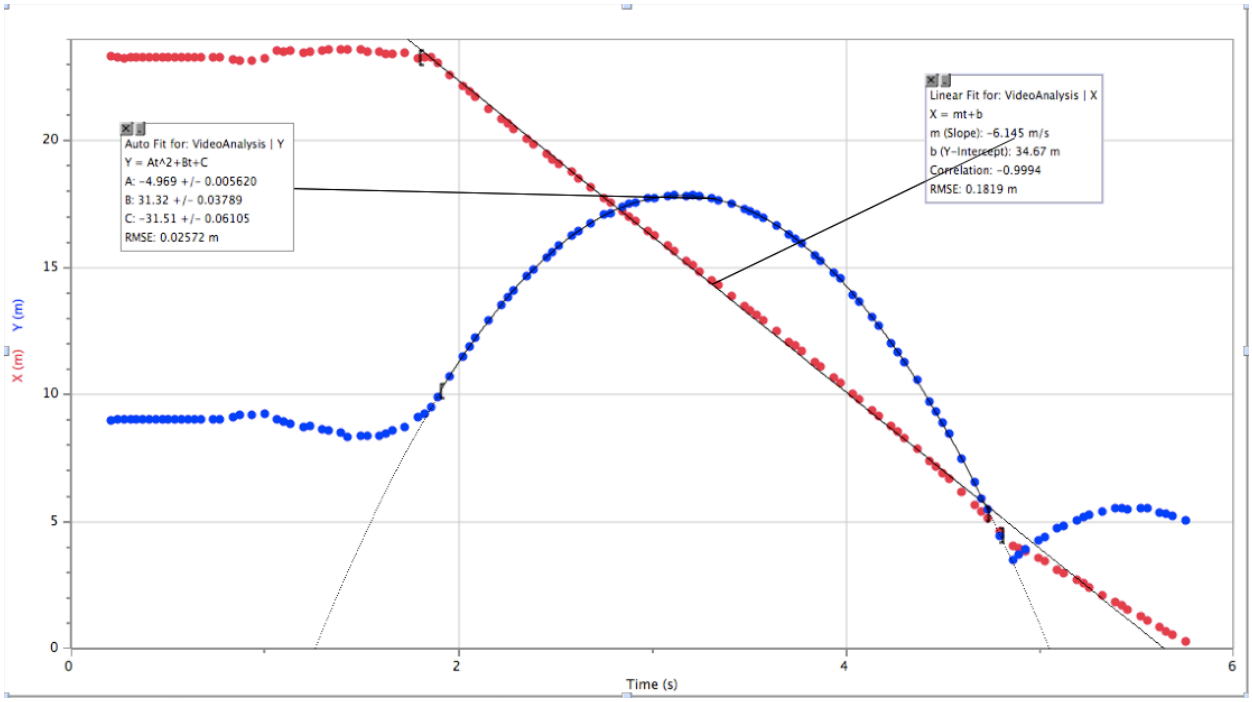
Background: Projectile motion is defined as motion without wings, propulsion, friction(air resistance), under the influence of gravity. The formula for this motion is Range = V0^2/g Sin(2theta).

Materials: laptop with video camera, ball, thrower, meter stick, marking cones

Procedure:

1. Setup cones 1 meter apart.
2. Setup laptop facing thrower.
3. Throw the ball while starting video capture.
4. Observe captured video and chart the dots as the video plays.
5. Analyze the graphy: X velocity, Y velocity, and gravity from S=1/2at^2

Data:



	VideoAnalysis				
	Time (s)	X (m)	Y (m)	Vx (m/s)	Vy (m/s)
1	0.2083	23.32	8.985	-1.000	0.650
2	0.2417	23.29	9.015	-0.951	0.363
3	0.2750	23.23	9.015	-0.437	0.106
4	0.3083	23.26	9.015	0.104	0.025
5	0.3400	23.26	9.015	0.051	0.000
6	0.3733	23.26	9.015	0.025	0.000
7	0.4067	23.26	9.015	0.000	0.000
8	0.4383	23.26	9.015	0.000	0.000
9	0.4717	23.26	9.015	0.000	0.000
10	0.5050	23.26	9.015	0.000	0.000
11	0.5383	23.26	9.015	0.000	0.000
12	0.5717	23.26	9.015	0.000	0.000
13	0.6050	23.26	9.015	0.000	0.000
14	0.6367	23.26	9.015	0.000	0.000
15	0.6700	23.26	9.015	-0.057	0.076
16	0.7367	23.26	9.015	-0.227	0.316
17	0.7683	23.26	9.015	-0.726	1.013
18	0.8350	23.17	9.135	-0.817	1.308
19	0.8683	23.14	9.195	-0.056	0.602
20	0.9350	23.14	9.195	0.984	-0.090
21	1.000	23.23	9.225	2.223	-1.208
22	1.065	23.53	9.015	2.185	-2.225
23	1.098	23.50	8.955	0.555	-2.442
24	1.132	23.53	8.835	-0.191	-2.000
25	1.198	23.44	8.715	-0.062	-1.068
26	1.232	23.50	8.775	0.592	-0.961
27	1.297	23.53	8.655	0.678	-1.557
28	1.330	23.59	8.595	0.322	-1.710
29	1.395	23.56	8.505	-0.102	-2.045
30	1.428	23.56	8.325	-0.168	-1.104
31	1.495	23.56	8.385	-0.502	0.014
32	1.528	23.50	8.385	0.651	0.258

Observations: It was a sunny day. My partner threw the ball up high off of a hill. It ascended until it hit its highest point and then descended. The path of the ball made a large arc or parabola. The computer graphed the ball's path and curved our line.

Analysis: We successfully captured the motion of a parabolic projectile and determined that g was -9.8 In the future we may repeat this experiment with a better camera with faster video. The frame rate was too fast for the computer to capture in real time. One might also repeat the lab with a brighter colored ball. Our gravity outcome was a little off due to air resistance. There could also have been an error in measuring the meter sticks on the screen.

Conclusions: We found gravity to be -9.8 and determined the parabolic projectile motion. We used the logger pro to graph the path of the ball and determine gravity. This lab could be perfected using better cameras, a more constant projectile, and in ideal conditions. Overall our outcome was close to the target number. It was a successful lab.