Title: Projectile Motion

Purpose: Analyze projectile motion using video analyisis
Background: Projectile motion is defined as a motion without wings, propulsion, friction(air resistance), under the influence of gravity. Formula is V0^2/g*sin(2*theta)
Materials: laptop computer with camera, logger pro, meter stick, cones, basketball.
Procedure:

- 1. Setup cones with meter stick.
- 2. Setup laptop facing throw.
- 3. Film the throw.
- 4. Use logger pro to analyze it.
- 5. Analyze the graph x vel. And vel. Gravity forms $s=1/2at^2$

Observations: They threw the ball into the air the ball decelerated and reached its highest point and then it accelerated towards the ground. Catching the ball was difficult. The balls arc was hard to keep in the frame. It may be difficult to watch the video. Make sure you log into admin o the laptop or you will not be able to use them on the student accounts.

Analysis: The conditions were good and there was no wind. The data was very accurate. The x velocity looked to be about -6 m/s. I used a curve fit for the y velocity. And found half of gravity to b -4.93m/s^2 which means gravity was -9.8m/s. The meter stick was hard to see with the camera they used. Having the ball bounce threw some of the data off but all in all it was pretty good.

Conclusion: I did not throw the ball myself I had to use another groups film and plot my own graph. My data was very accurate I was shooting for -4.9m/s^2, I came out with - 4.93m/s^2. I would have done a few things differently. I would have liked to have done the experiment myself and I would have liked t get a better camera.

		VideoAnalysis				
		Time	X	Y	Vx	Vy
		(s)	(m)	(m)	(m/s)	(m/s)
	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
	33	1.593	23.50	8.385	-0.828	0.965
	34	1.627	23.41	8.445	-0.962	2.589
	35	1.660	23.41	8.595	-0.419	3.223
	36	1.725	23.44	8.745	-1.036	4.014
	37	1.792	23.23	9.105	-1.228	5.036
	38	1.825	23.29	9.255	-1.010	6.685
	39	1.858	23.26	9.525	-3.796	9.770
	40	1.892	23.05	9.915	-6.122	11.677
	41	1.957	22.60	10.72	-6.754	12.008
	42	2.022	22.15	11.50	-6.924	11.765
	43	2.055	21.91	11.89	-6.753	10.920
	44	2.088	21.70	12.22	-6.545	10.278
Data:	45	2.155	21.25	12.91	-6.331	9.928

