YSJ

Lab work #3

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Introduction

This lab experiment showed the time span of a falling object from a certain meter in the air and down to the ground. Performing this experiment also identified the relationship between time and the distance of the falling object. If a ball was thrown up in the air twice the previous distance, will the time span for the ball to fall back to the ground two time more than the time before?
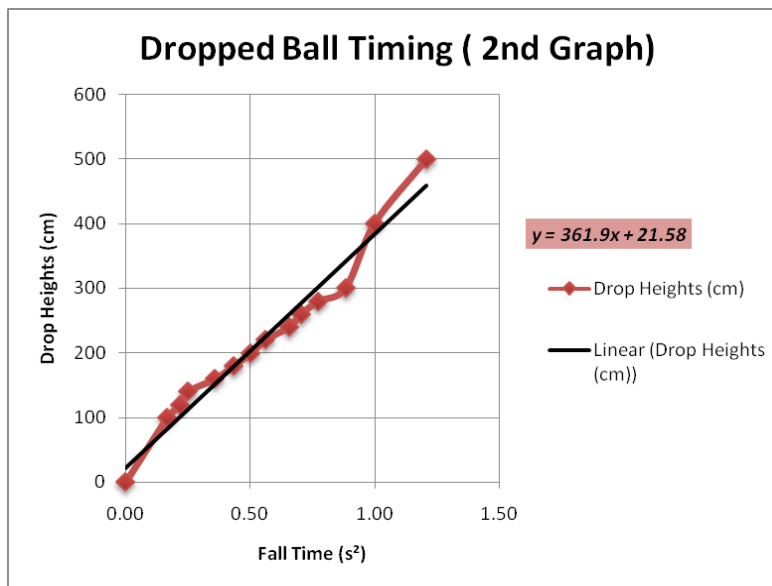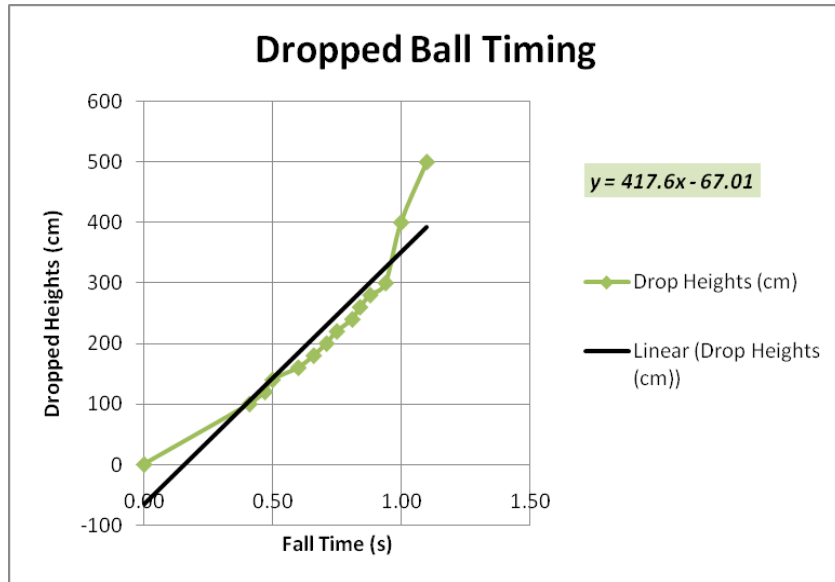
Equipments

- ➢ Bouncy ball (pispora ball)
- ➢ Meter sticks
- ➢ Stop watch
- ➢ Tape measure

Procedure

Adam, being the tallest amongst the group, was in charge of dropping and timing when the ball will hit the ground. Angelo and Tellez were responsible for measuring the next height to where the ball will be dropped, and I recorded each time fall.

First Table	
Fall Time (s)	**Drop Heights (cm)**
0	0
0.41	100
0.47	120
0.5	140
0.6	160
0.66	180
0.71	200
0.75	220
0.81	240
0.84	260
0.88	280
0.94	300
1	400
1.1	500

Second Table	
Fall Time (s²)	**Drop Heights (cm)**
0.00	0
0.17	100
0.22	120
0.25	140
0.36	160
0.44	180
0.50	200
0.56	220
0.66	240
0.71	260
0.77	280
0.88	300
1.00	400
1.21	500

Dropped Ball Timing

y = 417.6x - 67.01

Dropped Ball Timing (2nd Graph)

y = 361.9x + 21.58

Analysis

- ✓ There is a relationship between the time and height.

- ✓ Our calculated acceleration of gravity for the first graph is 835.2cm/s.

- ✓ The data we came up with does not form a straight line. Therefore it contradicted to the theory that was applied in the lab experiment.

- ✓ Slope for the first graph is 417.6 cm/s .

- ✓ The percentage error for the first graph is -15 or 15

- ✓ The percentage error for the first graph is -26 or 26

- ✓ The second slope for the 2nd graph is 361.96 cm/s².

- ✓ The acceleration of gravity for the second graph is 723.8 cm/s².

Conclusion

It appeared that the theory that stated, " Twice the distance upward will result in doubling the previous time span" has been proved wrong. Actually, as the distance of the ball upward increased, the time for it to fall back down also increased. This was due to the acceleration of gravity.

We had a number of data that caused our graph to "wiggle" , but it had no relation to why our first graph was not parabolic. This lab experiment was interesting, but there are a few analysis that made it difficult and confusing for me to report.