

9/8/13

Group Member:

## Bounce Height of a Tennis Ball

Purpose: Our purpose was to find if the starting drop height of the tennis ball would effect the height of the bounce.

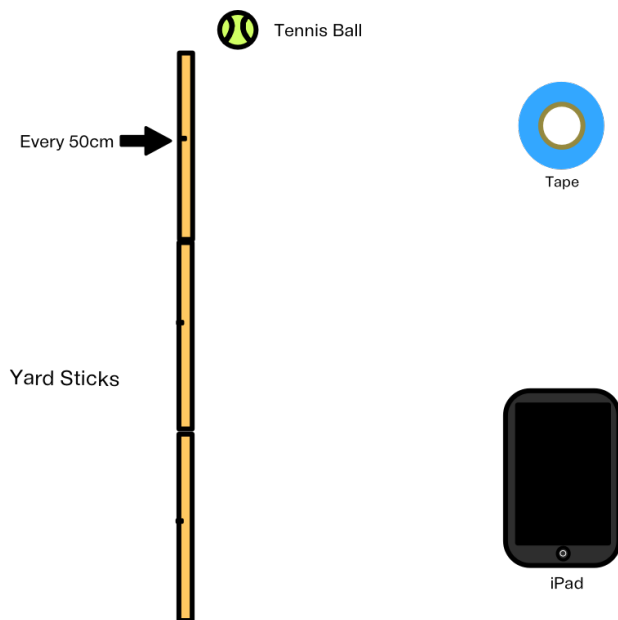
Dependent: height of bounce

Independent: starting height

Anticipated domain: starting height of ball

Anticipated range: height of bounce

We expected a linear relationship because our increments for the starting height was measured as 50cm apart for six different heights.



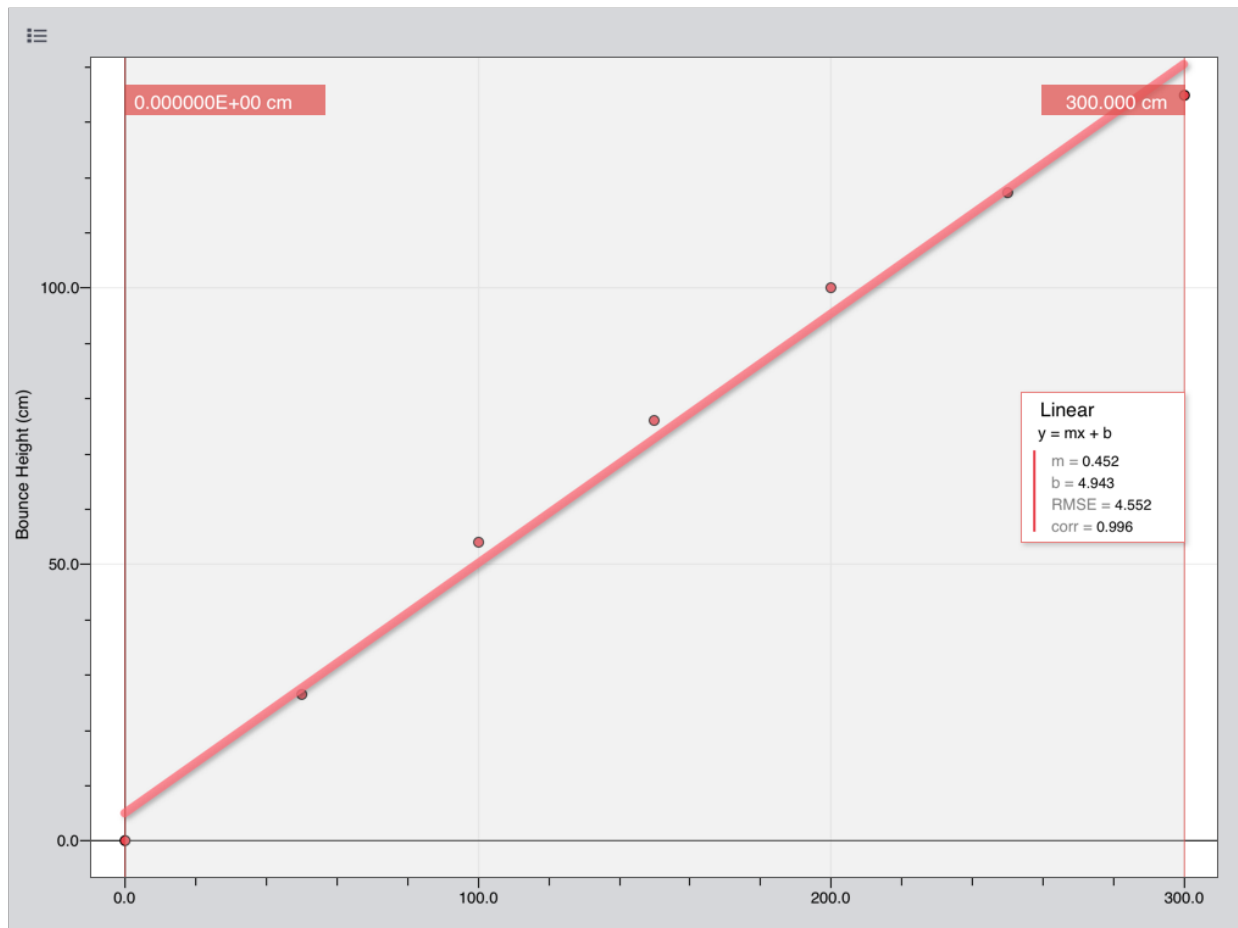
### Procedure:

- 1) Get together all materials.
- 2) Roll up pieces of tape and place them on the back of the yard stick. Next, place the three yard sticks against the wall.
- 3) Now you are going to place the ball at the 50cm mark; make sure that the bottom of the ball is aligned with the 50cm starting point.
- 4) Once you have your ball in place, drop it and watch to see what measurement the ball lands on, and yet again you are measuring the bottom of the ball.

- 5) Record the results and test it three times to get a more accurate result.
- 6) Do steps 3-5 for the 100,150, 200, 250 and 300cm mark.

Height	Bounce 1 (cm)	Bounce 2 (cm)	Bounce 3 (cm)
50	27	26	27
100	55	53	54
150	75	76	77
200	101	100	99
250	117	117	118
300	135	134	136

Height (cm)	Average (cm)
50	26.6
100	54
150	76
200	100
250	117.3
300	135



$$BH(DH) = .45(DH) + 4.94\text{cm}$$

#### Evaluation:

The relationship of this graph is that for every 50cm you add as the starting point, the bounce height of the ball increase about 20-30cm each time. The relationship between the bounce height and starting height is that if starting ball height increases then the bounce height will increase as well. The equation to represent this graph would be  $BH(DH) = .45(DH) + 4.94\text{cm}$ . Where H is the height, .45 is the slope, (DH) is rise over run and 4.94cm is the y-intercept.