

Data Analysis Preparation for Lab Assignments

Name:

Group Members:

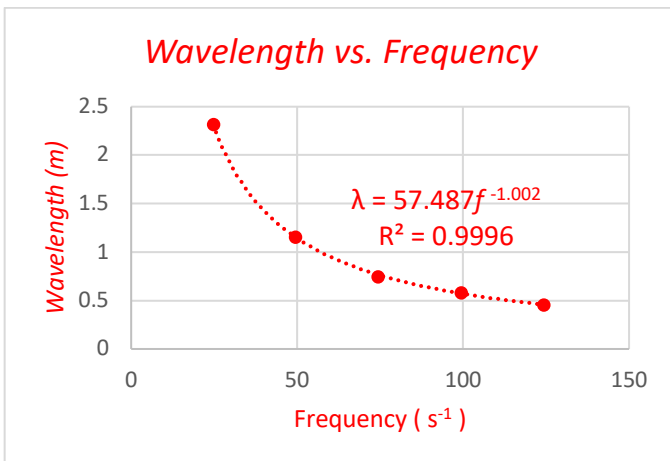
Question 1 (Sample)

Real data regarding the frequency of shaking a string and the corresponding wavelength of the wave produced.

	x-variable	y-variable
Trial	Frequency, f (s^{-1})	Wavelength, λ (m)
1	24.7	2.32
2	49.4	1.16
3	74.3	0.78
4	99.3	0.58
5	124.3	0.46

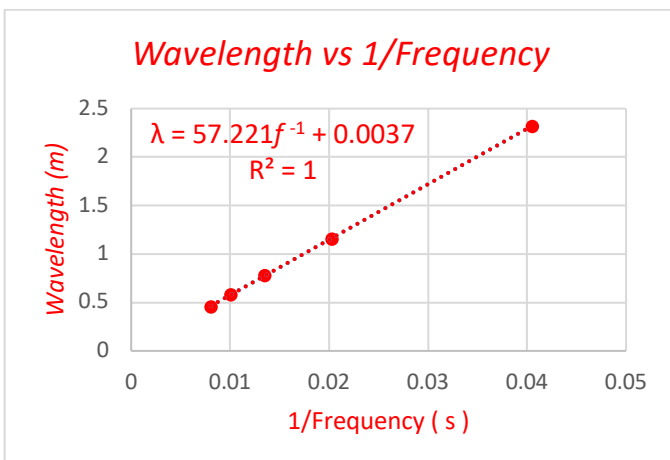
[Click here for a video walkthrough.](#)

Raw Graph (Place Power Regression)



Proportionality: $\lambda \propto f^{-1}$ OR $\lambda \propto 1/f$

Linearized Graph (Place Linear Regression)

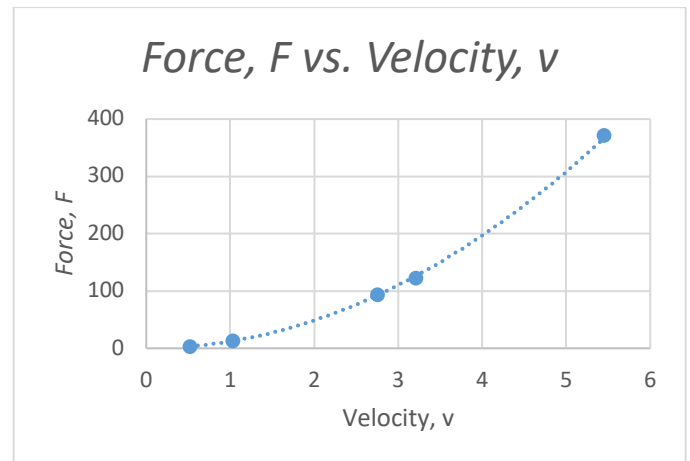


Question 2

Real data regarding the force needed to make a ball attached to a string go into horizontal circular motion.

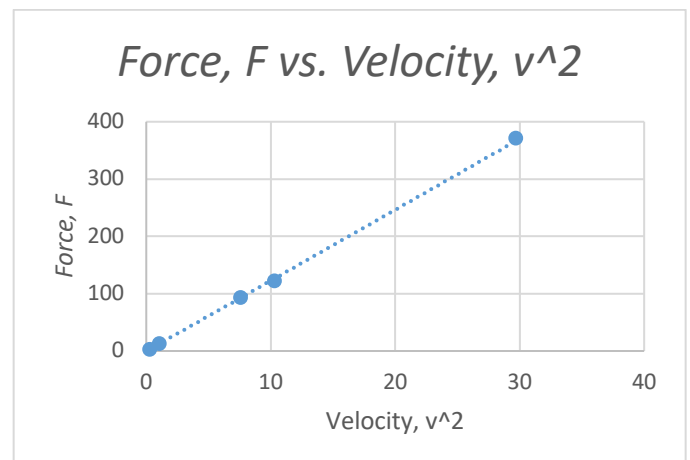
	x-variable	y-variable
Trial	Velocity, v (m/s)	Force, F (N)
1	0.52	3.27
2	1.03	12.8
3	2.75	93.7
4	3.21	123
5	5.45	372

Raw Graph (Place Power Regression)



Proportionality: $X = 12.111x^2$

Linearized Graph (Place Linear Regression)

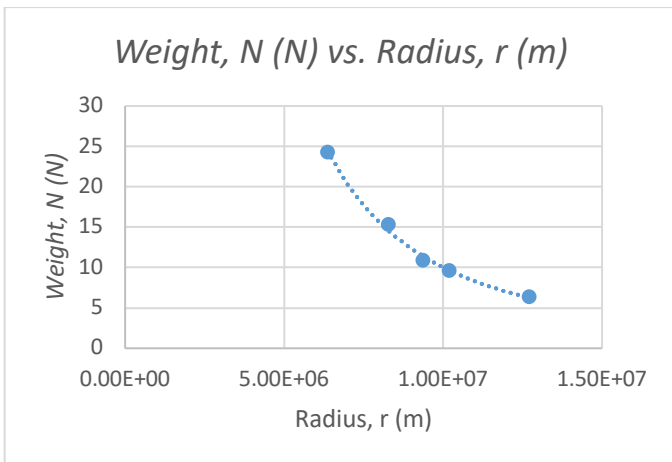


Question 3

Data regarding weight of an object as it changes its distance from the center of the earth. $R_{Earth} = 6.37 \times 10^6 \text{ m}$

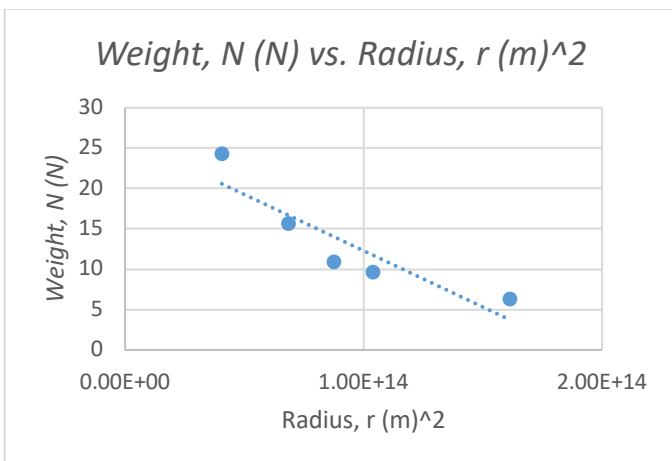
	x-variable	y-variable
Trial	Radius, r (m)	Weight, N (N)
1	6.37×10^6	24.3
2	8.28×10^6	15.6
3	9.36×10^6	10.9
4	10.2×10^6	9.61
5	12.7×10^6	6.32

Raw Graph (Place Power Regression)



Proportionality: $y = 3E - 06x + 39.739$

Linearized Graph (Place Linear Regression)

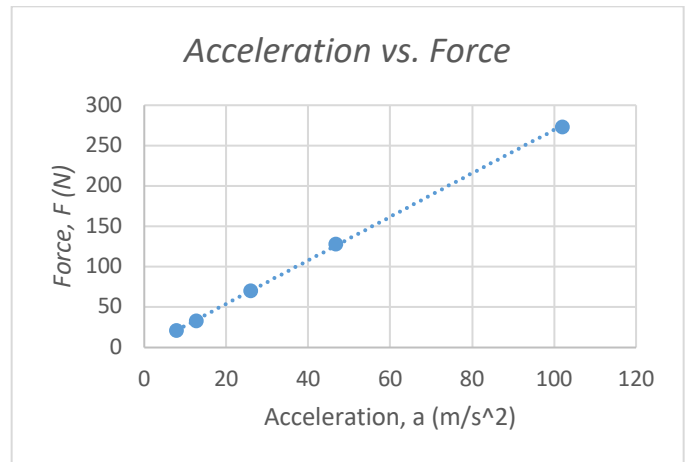


Question 4

Real data regarding the force applied on an object and the rate in which that object accelerates.

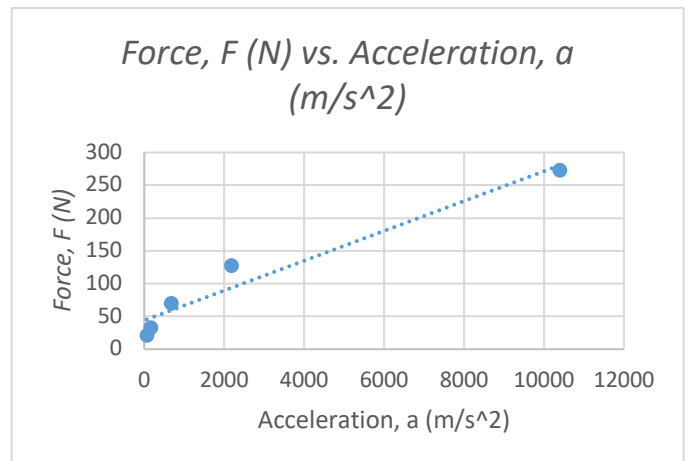
	x-variable	y-variable
Trial	Force, F (N)	Acceleration, a (m/s ²)
1	7.89	21.7
2	12.7	33.4
3	25.9	70.2
4	46.7	128
5	102	273

Raw Graph (Place Power Regression)



Proportionality: $y = 2.71x^{1.00}$

Linearized Graph (Place Linear Regression)

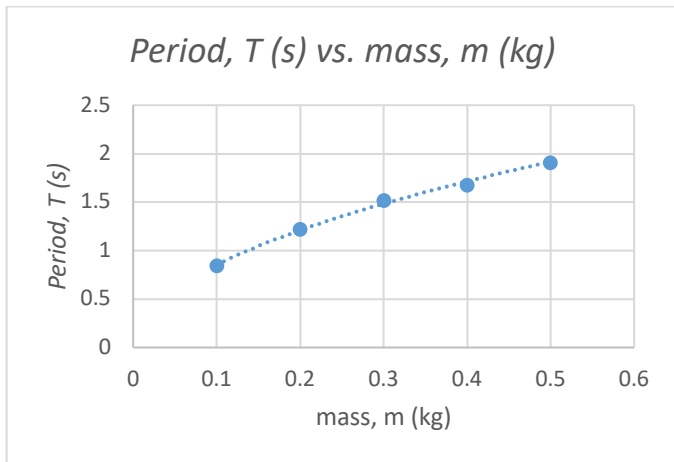


Question 5

Real data regarding the period of a spring's oscillation as the mass attached to the spring changes.

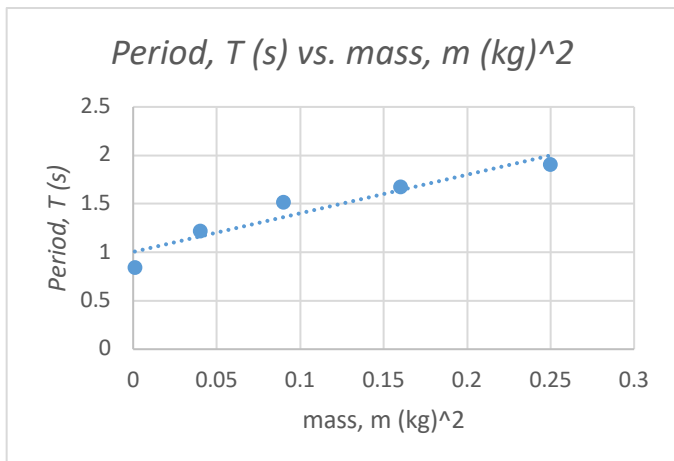
	x-variable	y-variable
Trial	mass, m (kg)	Period, T (s)
1	0.100	0.845
2	0.200	1.22
3	0.300	1.52
4	0.400	1.68
5	0.500	1.91

Raw Graph (Place Power Regression)



Proportionality: $2.72x^{0.503}$

Linearized Graph (Place Linear Regression)

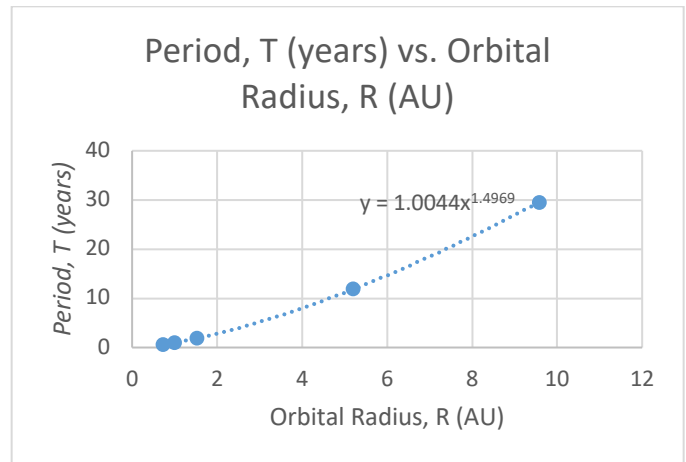


Question 6 (A weird one)

Real data on the time it takes the planets in our solar system to orbit our sun. Distances are in Astronomical Units (AU).

	x-variable	y-variable
Planet	Orbital Radius, R (AU)	Period, T (years)
Venus	0.720	0.616
Earth	1.00	1.00
Mars	1.52	1.88
Jupiter	5.20	11.9
Saturn	9.58	29.5

Raw Graph (Place Power Regression)



Proportionality: $1.00x^{1.50}$

Linearized Graph (Place Linear Regression)

