

Kepler's Third Law Experiment

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1. Effect of this experiment

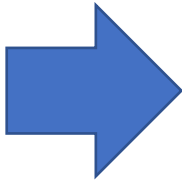


2. Preparation

Change the actual value to a value suitable for the experiment

	mass($\times 10^{21}$ kg)	Revolution radius($\times 10^4$ km)	Universal gravitation (N)
Mercury	330.2	5790	9.85×10^7 GM
Venus	4868.5	10800	4.17×10^8 GM
PlanetX	2986.8	12880	1.80×10^8 GM
Earth	5973.6	14960	2.67×10^8 GM
Mars	641.85	22790	1.24×10^7 GM

G;Gravitational constant M;mass of the sun



	mass(g)	Revolution radius(m)	Universal gravitation(gw)
Mercury	5.53	0.174	99.1
Venus	81.5	0.325	422
PlanetX	50	0.388	182
Earth	100	0.45	270
Mars	10.7	0.685	12.5

3. Experimental method

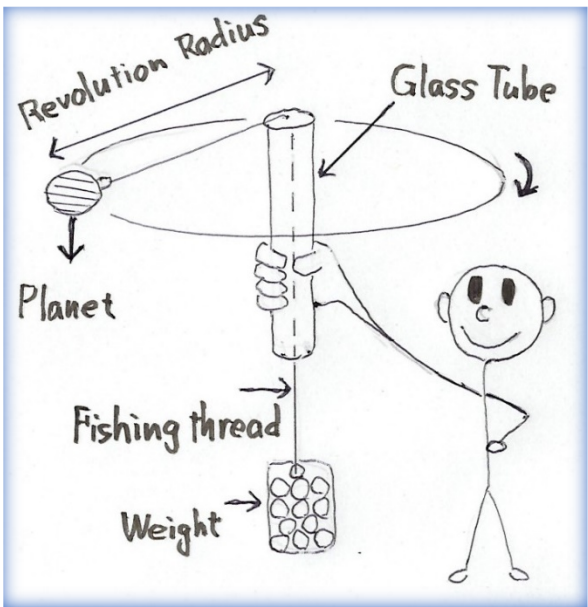
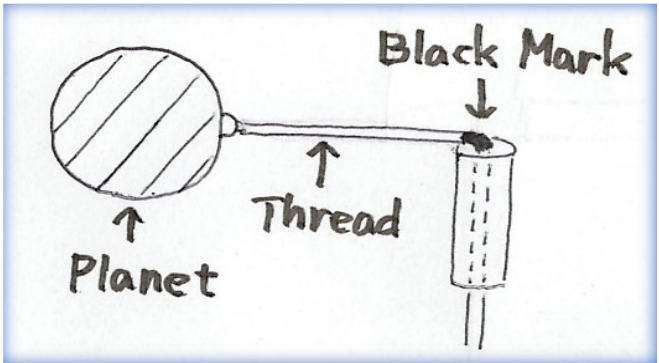


Fig.1 Experiment

1. Have a glass tube
2. Do not touch threads or weights
3. Spin above the head
4. Spin fast enough so that the black mark stabilizes at the top of the glass tube
5. Measure the time of 10 revolutions

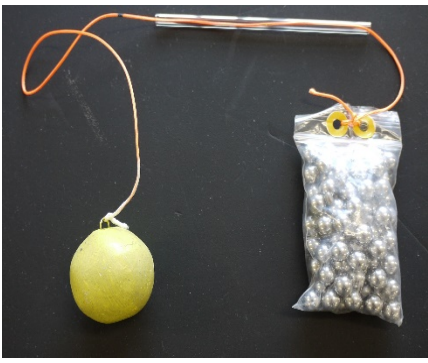


Black mark
It comes out when you turn it quickly
It sinks when turned slowly

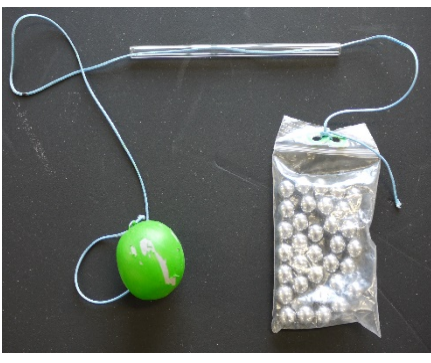
4. Planet type



Mercury



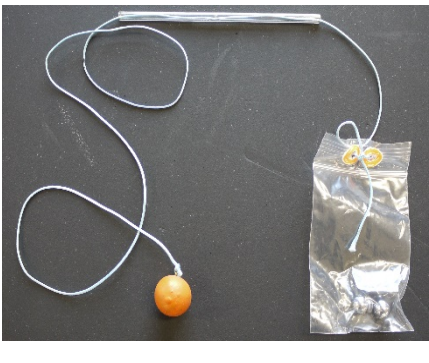
Venus



PlanetX



Earth



Mars

5. Processing



1. Work out the average of the period data (T) for each planet
2. Record the period data(T) in Excel
3. Make a scatter plot of the relationship between the T^2 and the r^3 (cube of the radius) of revolution.

6. Hope

I hope you will get the results shown in the figure.

Enjoy the experiment.

