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Physics207-Lab#1

09/19/2016

Measurements Lab Report

Introduction

Throughout Lab#1, it made me realize how human error can cause measurements to be off. Common errors seen in Lab#1 range from rounding error, human view of measurements, poorly calibrated tools and so on. It is important to be as precise as possible to get the best measurements. I believe this lab makes me more aware of how many human errors occur for daily workers such as surveyors who have to be precise in every measurement in order to help engineers and contractors.

Procedure

In the lab#1, my partner and I trying to understand the basic measurement of the circle to find the more specialized measurement. For exercise, we had to measure the circumference and such as the time between heartbeats. After the exercise we had to do measurement, first measurement using tape measure the circumference and the diameters of the circular of the three different circle of the object. Second measurement, we had to use the toothpick to make of shape of circle but the measurement of the toothpick to find the value of the pie and the result to should be close to the pie. But the measurement of circle using

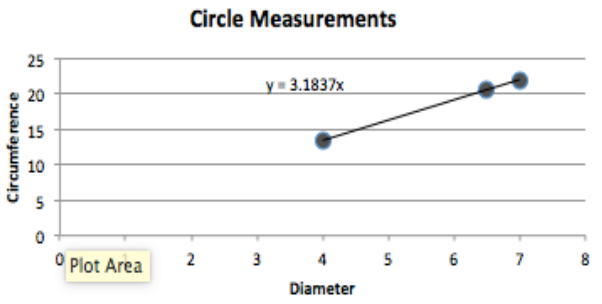
the toothpick to find how many using toothpick to make the circle?. And the entire toothpick measured the almost same amount of length relative to the circle. Third measurement, using the Google maps to find the estimate of the value of pie and also finding the measure of circular location and the point to using the interface of the maps. Then fourth measurement, we had to measure of the paper fish and finding the length of it. Also using the computer to mark the circumference of circles to all the measurement 1,2,3 and 4 into the graph. But the measurement of the circle experiment was easier as the circumference was to calculate with paper tape measure.

After all this measurement and exercise, we had to do the experiment of Density of wood and Time of oscillations. First experiment Density of wood, we had to use the formula for density of wood P=m/v formula. Second experiment Time of Oscillations, we had start making a long pendulum 1.5meter in length and find the length of the sting from the fixed point of rotation of the center of the mass. We had to swing it back and forth to finding the full swing of the pendulum with a length of 1.5 meter. And we had to do measurement for 5 times to find the different length, between 10cm and 1.5meter then using the plot in excel that shows time for one oscillation as a function of the length of string.

Data/Calculations/Questions

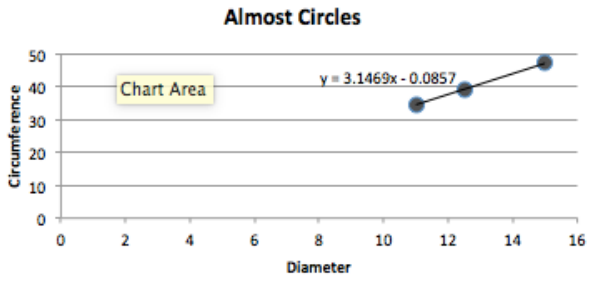
Measurement 1 Circles

Object	Diameter	Circumference
1	4	13.4
2	6.5	20.7
3	7	21.9



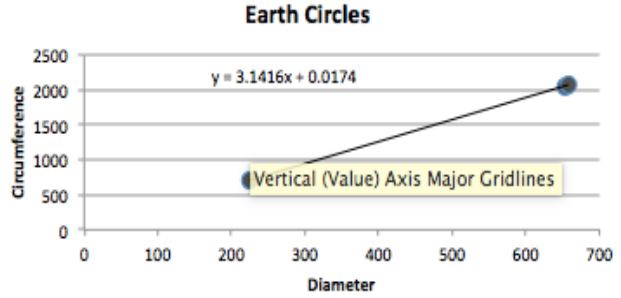
Measurement 2 Almost Circles

Number of segments	Diameter	Circumference
8	15	47.1
7	12.5	39.3
6	11	34.5



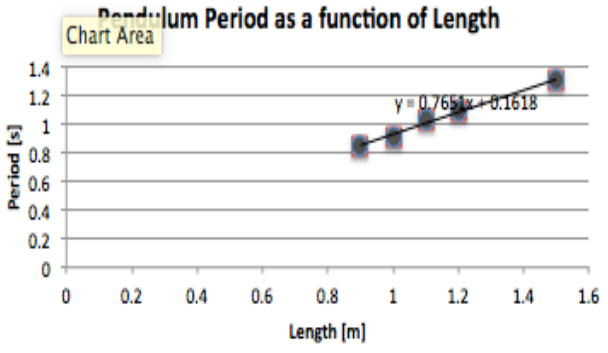
Measurement 3 Earthy Circles

Name of Feature	Diameter	Circumference
Storage Tanks	224.8	706.2414445
Painted Circles	653.03	2051.554251
Industry Pond	657.79	2066.508232



Measurement 4 Pendulum Lengths

Length of Pendulum	Period
1	0.9
1.2	1.09
1.5	1.3
1.1	1.03
0.9	0.85



Report Question: Circles

Discuss the limitations of theses methods for calculation pi. Which method was the best? The worst? Are there improvements to be made?

There were many limitations of the methods for calculating pi. One of the best ways to finding pi was Google maps use to find the value of the circumference of diameter. With a computer you get more accurate measurement. It's been closest pie that coming from a measurmen#1 of value 3.1837. Worse methods using stick to find circumference of the circle, which lead to an accurate result.

Report Question: Wood

Determine the uncertainty of your density measurement. This will involve some algebraic calculation. You can find some pointers here: Info about error analysis. Next, find an online database that you can use to lookup the density of various woods. Try to match you piece of wood with a known tree. Discuss whether you can be certain of your identification.

Report Question: Pendulum

Based only on your experimental data, can you say how the time for one swing relates to the length of the pendulum? Is there clear function dependence?

Base on the experiments, there is a function depend of the period of the pendulum depend on the length increases of pendulum. In pendulum of experiment, every time full sawing getting the accurate measure because the length of string is falling down so its keep on same.

Report Question Bio-metrology

Is there a correlation between the circumference of someone's head and the time between heartbeats? Would you expect there to be one?

There isn't any correlation between of the circumference of head size and heartbeats because lot of people heartbeat maintained by times. Logically people are not same of the size of head, which would correlate to their heartbeats, is faster.

Conclusion

Base on experiment lab#1, its was good experiment to do the lab first we did the measuring tools of the tape rule. Since the human not accurate, so we had found the tool to get accuracy example of Google Maps to get more exactly point of the circle.