Gravitational Force Lab

**Purpose:** *Write in Lab* Report

To determine the difference between the calculated gravitational force and the experimentally observed force

**Theory:** *Write in Lab Report*

Refer to your notes for pertinent formulas and definitions. (Ex: Force of gravity, mass, 9.81, etc.)

**Materials:** *Write in Lab Report*

* I Pad
* Pasco Force Sensor and SparkLink
* Masses
* Egg drop Apparatus

**Procedure:** *Write in Lab Report*

1. SparkLink on.
2. Connect Force sensor to the front of SparkLink.
3. If blue light is flashing for Bluetooth then turn on Ipad and under setting select Bluetooth and connect to SparkLink. (If not, call the teacher over)
4. Once you are connected, open the Sparkvue app.
5. Make sure you can see the force read out. Record the negative force.
6. Have one person hold the force sensor at the edge of the table and have another person apply a mass to the sensor.
7. Apply a variety of masses to the force sensor and record the masses and the force readout
8. Hang your egg drop apparatus and record the force readout.

**Data** *Write in Lab Report*

Fill in the attached chart.

**Analysis** *Write in Lab Report*

1. Find the calculated gravitational force for each mass.
2. Find the difference between the calculated gravitational forces and the measured gravitational forces.
3. Calculate the average difference.
4. What do you notice about the differences?
5. Explain the differences between the calculated and measured gravitational forces.
6. How do your differences compare with the negative force you created at the beginning?
7. What are some sources of error in this lab?

**Conclusion**

What is the average difference between the calculated and measured gravitational forces and how do you account for them?

Data

|  |  |  |  |
| --- | --- | --- | --- |
| Mass (Kg) | Measured Force (N) | Experimental Force (N) | Difference (N) |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  | Average: |