**Force of Gravity Lab Name:\_\_\_\_\_\_\_\_\_\_\_\_\_**

Purpose:

1. To use a newton gauge to measure the force of gravity on various objects
2. To determine the relationship between mass and force of gravity

Background questions (refer to pages 279-281 of your textbook)

1. What is the definition of mass?
2. What are the units used to measure mass?
3. What type of device is used to measure mass?
4. What is the definition of a force?
5. What are the units used to measure force?
6. What type of device is used to measure force?

Hypothesis:

1. Do you think that the force of gravity and mass will have the same value when measured with a newton gauge? Explain
2. Do you think there is a mathematical relationship between mass and force of gravity? For example what will happen to the force of gravity when mass is increased?
3. Is there a proportional relationship? For example what will happen to the force of gravity if mass is doubled

Materials:

- 5 Newton gauge

- 20 Newton gauge

- set of masses

Graph paper

Procedure:

1. Zero your newton gauge
2. Obtain a mass from the set of masses. Record the mass as written on the side in grams. Convert the mass in grams to kilograms
3. Hang the mass from your newton gauge.
4. Measure the force of gravity on the mass
5. Record the force of gravity
6. Repeat steps 2-5 for several masses

Observations:

|  |  |  |
| --- | --- | --- |
| Mass (g) | Mass (Kg) | Force of gravity (N) |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |

Create a graph of your results above. Remember force must be placed on the y axis (vertical) and Mass must be placed on the x axis (horizontal)

Discussion

1. Based on your data table, what happens to the force of gravity when mass is increased?
2. Is there a mathematical relationship between the mass in kilograms and the force of gravity? (Look at overall trends not individual values)
3. Based on the pattern in question 2, what do you think the force of gravity will be on a mass of 15kg. Explain how you found your answer or clearly show a calculation
4. Using your graph, determine the force of gravity on a 430 g mass. Show how you did this by indicating on your graph

Conclusion:

1. What is the relationship between force of gravity and mass?
2. Did the results of your experiment support or refute you hypothesis?
3. Are there any changes you would make to your hypothesis after conducting this lab?