

Name: \_\_\_\_\_ Date: \_\_\_\_\_

Title: How are the weight and mass of an object related?

Question: What is your hypothesis as to the relationship between mass and weight of an object.

Hypothesis:

Materials:

Spring Scale

Triple Beam Balance

Computer

### **Experimental Procedure**

1. Obtain five to ten objects of different mass.
2. Measure the mass of each object obtained in step one using a triple beam balance. This is measured in grams. Record each mass in a data table (Create your own with labels).
3. Convert each mass from grams into kilograms. There are 1000 grams in one kilogram. Record on data table.
4. Measure the weight of each object using a spring scale capable of measuring to 20 Newtons. Record each weight in the data table.

### **Data Table(make your own)**

### **Data and Analysis**

1. Using a computer, plot the independent variable (the mass in kilograms.) on the horizontal axis and the dependent variable (the weight) on the vertical axis. of graph paper so trends will be apparent.
2. Follow teacher on how to graph and annotate graph.
3. Apply a linear fit to your graph by "R="

### **Post-Experimental Questions**

1. What was the slope of the line(Linear fit) that you calculated in this experiment? Include units.
2. The actual value for this slope on Earth as measured by more sophisticated equipment than those we used in this experiment is 9.81 Newtons/Kilogram (N/Kg). What units for acceleration are the same as N/kg?
3. Using the equation that you calculated, what would be the weight of a 200 kilogram mass on Earth?
4. If this experiment had been done on the moon the mass would have still been the same. Why?
5. We call the slope of the line you calculated today, the acceleration due to gravity. The acceleration of gravity on the moon is 1.62 N/kg. Add a column to your table and calculate the weights of the objects on the moon.
6. How much would a 200 kilogram mass weight on the moon? Include correct units.