

Name: _____

Class: _____

Date: _____

Mass vs. Weight Lab Activity (Mini-Lab)

Background Information: *Mass* is the measure of the amount of matter (stuff) in an object. *Weight* is a measure of the gravitational force pulling on an object. Mass is always constant for an object and does not change, no matter where the object is in the universe. Weight may change because it is determined by the amount of gravity being exerted on an object.

One of the factors that affect gravity is mass. For example, the Earth has a greater mass than the Moon and therefore exerts a stronger gravitational pull. That is why the weight of an object on the moon is less than its weight on Earth. Since the Earth has six times the mass of the Moon, an object's weight on the Moon will be 1/6 of its weight on Earth.

Procedure:

1. Using the balance measure the **mass** of each item listed below.
2. Record your data.
3. Using the background information above, complete the rest of Table 1.

Data:

Table1

Item	Mass on Earth (g)	Weight on Earth (N)	Mass on Moon (g)	Weight on Moon (N)
Rubber Stopper				
Test Tube Clamp				
250 ml empty beaker				
Beaker Tongs				
Goggles				
Tennis Ball				

Questions: Answer the following using complete sentences

1. Why does the weight of an object change when you go to the moon? Explain.
2. What instrument did we use to measure mass? Weight?
3. What would the weight of a 352 kg object be on the moon. Show any process work needed.
4. If an object had a mass of 2.16 kg on Earth what would its mass be on the Moon?
5. The mass of a moon rock was not measured before it was brought back to the Earth. How would you be able to determine what its mass would be on the moon? Explain your answer.
6. On Earth, how many grams of mass does it take to produce a force of 1 newton? (Remember the strength of gravity is 9.8 m/s^2).