

Handout: Mass vs. Weight



Lesson Overview:

In this lesson, we will be understanding what the concept of mass is, and why it is not the same as weight. We will also learn the SI units of mass. Please read and complete the worksheet for this lesson.

Mass

- **Mass is the measure of how much matter is in an object, this quantity is obtained by their weight on Planet Earth.** Basically, how much atoms make up an object.

Example: A balloon might be bigger than a rock, but the rock would have more atoms in it, hence it has a higher mass.



Mass of balloon:
1.02 grams



Mass of rock:
2,900 grams

- The basic SI units of measuring mass is shown below in ascending order
 $\text{mg} \rightarrow \text{g} \rightarrow \text{kg} \rightarrow \text{tonne}$ (Other units do exist, but are not used as much as these)
- The tools used to measure mass are called balances:
 - o Electronic Balance



- o Triple Beam Balance



Why is mass NOT the same as weight?

Many people like to confuse mass and weight because they are directly proportionate to each other. This means that the more mass something has, the more weight they will likely gain.

Weight tells you how heavy something is, which means it depends on the gravity of an environment. Mass tells you how much matter (atoms) is in an object.

If a human were to go to the moon, their mass will remain the same, but their weight will change because they will be lighter due to low gravity. The SI unit for measuring weight is Newtons (N)



Worksheet

True or False Section: State TRUE if the statement is correct, FALSE if the statement is wrong.

- _____ 1.) In space, an asteroid has a mass of 1 ton, if the asteroid were to hit Earth, its mass would increase.
- _____ 2.) Heavier objects have more mass than lighter objects.
- _____ 3.) If two objects have the same size, they will have the same mass.
- _____ 4.) Kilograms is greater than milligrams
- _____ 5.) Mass is reliant on gravity.