

MATTER

students Chernushevich A.V., Sanko V.N.
scientific supervisor – senior lecturer Matusevich O.A.
Belarusian National University of Technology
Minsk, Belarus

Scientists seek knowledge of the world around them. Some scientists are most interested in studying living things, such as plants, humans, animals, insects, birds, reptiles, microorganisms, etc. They are able to perform the vital functions needed for the survival like, growth, respiration, reproduction, sensitivity, movement, metabolism. Others investigate nonliving things, such as metals or sound.

Each of these interests is the focus of a different area of science. Biology, or life science, is concerned with living things. The area of science concerned mostly with nonliving things is physical science. It studies the materials that make up the world. It also explores the changes that occur in these materials.

All objects have certain properties. Part of the work of a scientist is to describe these properties. They make such descriptions by making measurements and one of them is mass. The mass of an object is the amount of material it contains [1]. For example, a mountain has a large mass. A grain of sand has a small mass. In general, an object with more mass feels heavier than an object with less mass.

How do we measure the mass of an object? We can use a balance. The latter is an instrument that compares the masses of two different objects. The mass of one object is known. One object is placed on each pan of the balance. If their masses are not equal, one pan falls while the other rises. If the masses are equal, the two pans balance each other out.

Scientists also measure the volume of an object. Volume is the amount of space an object takes up. A basketball has a greater volume than a baseball. The basketball takes up more space. How do we measure the volume of an object? A graduated cylinder (also called a graduate) is used most often to measure the volume of liquids. This instrument is marked with graduations, or lines, to show volume. It is used just as a kitchen measuring cup is. The two properties of mass and volume define what all objects are made of: matter. The latter is anything that has mass and volume. A cube of ice, a glass of water, and the moisture in the air are all made of the same kind of matter: water. Yet each has a different form, or phase. Most matter exists in one of three phases: solid, liquid, or gas. We can identify the phase of matter by its shape and volume. A solid has a definite shape and volume. An ice cube keeps its shape and volume as long as it does not melt. A liquid has no definite shape but has a definite volume. A gas has no definite shape or volume. It spreads out to fill the entire space of its container. It can change both its shape and its volume [2].

There are two types of matter properties: physical and chemical. A physical property is a property that can be observed without changing the identity of a substance. Properties that describe the ability of a substance to be changed into new substances are chemical ones.

References

1. What is Matter? [Electronic resource]. – Mode of access: <https://socratic.org/chemistry/a-first-introduction-to-matter/what-is-matter>. – Date of access: 13.03.2023.

2. What is the Main Focus of Physical Science? [Electronic resource]. – Mode of access: <https://mv-organizing.com/what-is-the-main-focus-of-physical-science/>. – Date of access: 21.03.2023.