**Atoms and molecules**

The tiny particles that make up elements are called atoms. An **atom** is the smallest unit of an element that retains or keeps the properties of that element. For example, the atoms that make up oxygen can never be changed.

The inside of an atom contains three different kinds of particles as well. They are called protons, neutrons, and electrons. Surprisingly, atoms are not solid, they are mostly empty space. There is a tiny, very dense body in the center of an atom called the **nucleus.** Inside the nucleus are the protons and neutrons. The electrons are in the space outside the nucleus.

A **proton** carries one unit of positive electric charge. An **electron** carries one unit of a negative electric charge.  **Neutrons** have no electric charges. The number of protons in an atom determines what the element is. An oxygen atom, for example, has eight protons.

The **Periodic Table of Elements** shows the number of protons for each element. The element or substance called sodium has eleven protons. Sodium is a substance when combined with another substance makes salt. As in all kinds of matter, the different elements can be a solid, liquid, or gas.

The different kinds of atoms are then joined together to make a molecule. A molecule is a particle that contains more than one atom joined together. Basically, atoms come together in different ways to make molecules, and molecules come together in different ways to make different kinds of matter.

Water is an example of a molecule made up of different atoms. The atoms for water include hydrogen and oxygen. It takes two atoms of hydrogen and one atom of oxygen to make one molecule of water. This would be an extremely tiny drop of water a person could not see without a special microscope. Some elements are made up of single atoms and do not attach to any other kinds atoms. Neon is an example of an atom that does not attach to another atom.

However, there are certain atoms that attach to themselves to make different substances. For example, oxygen is usually made up of two-atom molecules. But, a three-atom molecule of oxygen will create ozone. Oxygen and ozone is very different from each other but both use oxygen atoms to be formed.

Most everyday substances people use are made up of a combination of different molecules. Table salt is made up of an element called sodium joined with an element called chloride. Sodium chloride is the scientific name for salt. The different atoms making up sodium and chloride are joined together to make a new substance and molecule called salt.

Sometimes the use of atoms and molecules can be very confusing but it sometimes can be thought of as a recipe. In summary, the particles (or ingredients) that make up an **atom** are **protons,** neutrons, and electrons. Atoms (another ingredient) are particles joined together in many different ways and methods to form **molecules.** Finally, the molecules (more ingredients) are joined together to make everything on Earth and in the universe.

Top of Form

1) The smallest unit of an element that retains or keeps the properties of that element is called

**A:** A molecule

**B:** An atom

**C:** A proton

**D:** A neutron

2) Which of the following does not have an electrical charge?

**A:** Neutron

**B:** Electron

**C:** Neuron

**D:** Proton

3) The Periodic Table of Elements show the number of \_\_\_\_\_\_\_\_\_\_ for each element.

**A:** Neutrons

**B:** Electrons

**C:** Atoms

**D:** Protons

4) How many more protons does sodium have than oxygen?

**A:** 8

**B:** 11

**C:** 3

**D:** 1

5) Protons, electrons, and neutrons make up atoms and atoms make up

**A:** Substances

**B:** Matter

**C:** Molecules

**D:** Solids

6) Sodium Chloride is the scientific name for which of the following substance?

**A:** Water

**B:** Sugar

**C:** Gas

**D:** Salt