



An oxygen atom has 8 positive protons and 8 neutrons in its nucleus, and 8 negative electrons speeding around the nucleus.

Everything is made of **atoms**. Atoms are tiny pieces of matter. They are too small to see even under a microscope. In fact, the smallest piece of matter you can see under a microscope has 10 billion atoms.

Atoms are made of even tinier bits of matter. There are three kinds of particles in atoms. They are **protons, neutrons, and electrons**. All electrons are exactly the same. All protons are alike, too. So are all neutrons. If all atoms are made of the same kinds of particles, how are atoms different?

Different kinds of atoms are different from each other because they contain a different number of particles. A carbon atom has six protons, six neutrons, and six electrons. Oxygen has eight protons, eight neutrons, and eight electrons. Oxygen is different from carbon because it has more particles. Each kind of atom has a different number of the three particles.

Protons and neutrons are in the center, or **nucleus**, of the atom. Electrons are much smaller than protons and neutrons. Electrons move around the nucleus at great speeds. Because electrons move so fast, it is impossible to tell exactly where an electron is at any one time.

The particles that are in atoms have different **electric charges**. Electrons have a negative electric charge. Protons have a positive electric charge. Neutrons have no electric charge. An atom with the same number of electrons and protons also has no electric charge. An atom without an electric charge is called a neutral atom.

**Draw lines to complete the sentences.**

1. Atoms \_\_\_\_\_ have a positive electric charge.
2. Electrons \_\_\_\_\_ are made of protons, neutrons, and electrons.
3. Neutrons \_\_\_\_\_ have a negative electric charge.
4. Protons \_\_\_\_\_ have no electric charge.
5. The nucleus \_\_\_\_\_ is made of protons and neutrons.

**B. Write the letter for the correct answer.**

1. Atoms are made of three small \_\_\_\_\_.  
(a) elements (b) particles (c) electrons
2. All electrons are \_\_\_\_\_.  
(a) exactly the same (b) positive (c) different
3. Different kinds of atoms are different from each other because they contain a different \_\_\_\_\_ of particles.  
(a) size (b) number (c) speed
4. Protons and neutrons are in the center, or \_\_\_\_\_, of the atom.  
(a) nucleus (b) electron (c) charge
5. Protons have \_\_\_\_\_.  
(a) negative charges (b) positive charges (c) no charge
6. Because electrons \_\_\_\_\_, it is impossible to tell exactly where an electron is at any one time.  
(a) move too slowly (b) do not move (c) move so fast
7. Neutrons have \_\_\_\_\_.  
(a) positive charges (b) negative charges  
(c) no electric charge

**C. Use each word to write a sentence about the parts of an atom.**

1. proton \_\_\_\_\_  
\_\_\_\_\_
2. electron \_\_\_\_\_  
\_\_\_\_\_

# The Periodic Table of the Elements, in Pictures

