COMPLETE INTRODUCTION TO CHEMISTRY (GRADES 3-5)

KT-CHEMELM

www.homesciencetools.com | 406.256.0990
Science Foundations Series

TABLE OF CONTENTS:

What happened?

As you did your scavenger hunt, you should have found that most matter in nature is made of more than one element. Some elements are more commonly found in nature than others, with some elements, like Americium, Californium, and Seaborgium, only being found in a scientific laboratory setting.

Many elements are only found combined with other elements because their atoms are unstable on their own. These elements are more reactive than others. More reactive atoms easily attach to other atoms, forming molecules. **Molecules** are two or more atoms bonded to each other. Atoms of some elements also form molecules with each other in addition to forming molecules with atoms of other elements.

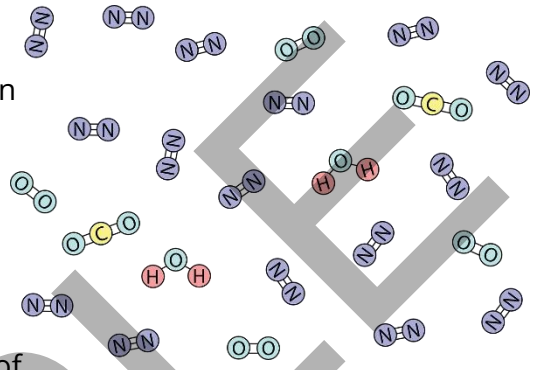
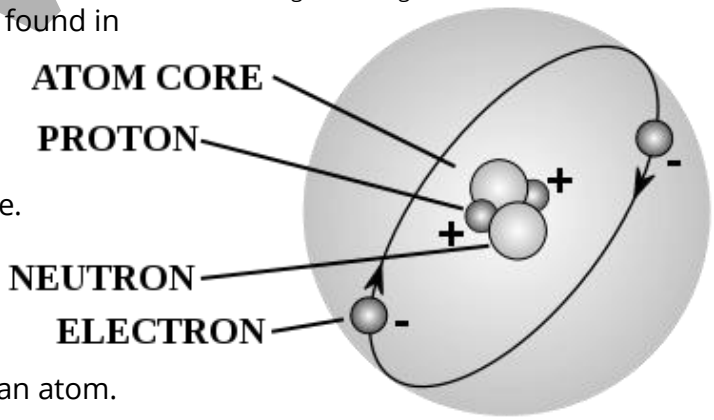


Figure 3. Molecule examples.

ATOMIC STRUCTURE

The elements shown on the periodic table are made of atoms. Atoms have three **subatomic particles**, which are pieces or parts of an atom. They are protons, neutrons, and electrons.

Figure 4. Diagram of an atom.



Protons have a positive charge and they're found in the nucleus, or center, of an atom. They determine the identity of an atom. The number of protons an atom has determines its number on the periodic table. For example, gold (Au) has 79 protons and is number 79 on the periodic table.

Neutrons are also found in the nucleus of an atom. Rather than a positive charge, they have a neutral charge. They help stabilize the atom. Most atoms have the same number of protons as neutrons.

Electrons are not found in the nucleus of an atom and are instead found moving quickly outside of the nucleus in what's called the electron cloud. They have a negative charge, and their numbers and locations within the electron cloud can make an atom more reactive and able to bond with other atoms.

SCIENCE IN ACTION

You have learned how to use many tools and procedures throughout your chemistry study with this kit. However, science is more than just knowing about those tools and procedures. Instead, it is using them to answer a bigger question. That question may be one that you have or one that someone else has for you.

Using your science skills, you will solve a mystery in this last activity. This will be just like what a scientist in the field does. Are you ready to solve a mystery?

Figure 15. Scientists in a Laboratory

ACTIVITY #11 –MYSTERY POWDERS

FROM THE KIT: 2 mystery powders and any other kit materials of your choosing.

NOTE: It can be helpful to think through the previous activities before starting on this one.

You are baking cookies for your parents. When you pull ingredients out of the cupboard, you find that not everything is labeled. Oh, no! Using the skills and techniques you have learned in this kit, determine the identities of two white mystery powders. You can use any materials in this kit to help you.

Mystery Powder	Identity
#1	
#2	

What happened?

Great work using your science skills to determine the identities of those mystery powders.

Mystery Powder	Identity
#1	*Table salt or sodium chloride (NaCl)*
#2	*Baking soda or sodium bicarbonate ($NaHCO_3$)*

Did you know that salt and baking soda are used in baking cookies for different reasons?

Salt helps to enhance the flavors of the other flavors in the cookie dough. It also makes them chewier. Without salt, cookies don't taste as good and can get hard or crunchy.

Baking soda is a leavener, which means that it helps the cookies to rise as they bake. While your cookies will taste okay without baking soda, they won't look as good sitting on a plate.

Figure 16. Cookies Without Baking Soda

Figure 17. Cookies With Baking Soda

NOTES

NOTES