

Name \_\_\_\_\_

Period \_\_\_\_\_

## Atoms and Their Parts (Subatomic Particles)

Substances that contain only one kind of atom are called **elements**. Some familiar elements are oxygen, gold, silver, and helium. An **atom** is the smallest part of an element that can be broken down and still have the characteristics of that element. All atoms have the same basic structure.

With the exception of hydrogen, all the atoms have three main parts. The parts of an atom are **protons**, **electrons**, and **neutrons**. A proton is positively charged and is located in the center or **nucleus** of the atom. All atoms of the same element have the same number of protons. The number of protons in the nucleus is called the **atomic number** and again, is unique to each element. A different number of protons would mean you have a different element. Electrons are negatively charged and are located in shells or orbits spinning around the nucleus. The number of protons and electrons can be equal. This equality is important so that the atom is neither positively nor negatively charged. It is said to be **neutral**. The third part of an atom is the neutron. Neutrons are neither positive nor negative and are located in the center of the nucleus of an atom along with the protons. Protons and neutrons are the massive parts of an atom. Their combined masses are called the **atomic mass** of an element. Electrons are so light that we say they have essentially no mass.

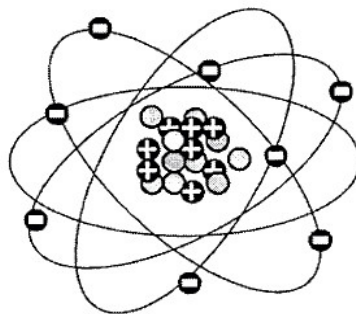
After reading the above, use the table below to help you understand the basics about protons, electrons, and neutrons.

Subatomic Particle	Mass		Charge			Where Found	
	Yes	No	Positive	Negative	Neutral	Inside Nucleus	Outside Nucleus
<b>Proton</b>							
<b>Electron</b>							
<b>Neutron</b>							

Study the drawings and answer the questions at the bottom of the page.



Atom A



Atom B

**Legend:**

- ⊕ Proton
- Neutron
- ⊖ Electron

1. How many protons are in atom A? \_\_\_\_\_ atom B? \_\_\_\_\_
2. How many neutrons are in atom A? \_\_\_\_\_ atom B? \_\_\_\_\_
3. How many electrons are in atom A? \_\_\_\_\_ atom B? \_\_\_\_\_
4. What is the atomic mass of atom A? \_\_\_\_\_ atom B? \_\_\_\_\_
5. What is the atomic number of atom A? \_\_\_\_\_ atom B? \_\_\_\_\_



Name \_\_\_\_\_

## Parts of the Atom

*\*Fill in the following table about the parts of the atom. (AMU stands for atomic mass unit.)*

PART OF THE ATOM	ELECTRIC CHARGE	LOCATION IN ATOM	MASS (in AMU's)
proton			
neutron			
electron			

*\*Here's how to predict the structure of any element on the periodic table. For example, look at carbon:*

6
C
carbon
12.011

← atomic number: This is the number of protons (also the number of electrons)

← chemical symbol: This is an abbreviation for the element.

← element name: This is the name of the element.

← atomic mass (in AMU's): This number (rounded off) tells you the number of protons *plus* the number of neutrons. (Electrons are too small to be included.)

**To find the number of protons, look at the atomic number:**

Example for carbon:                      Atomic number: 6                      Number of protons: 6

**To find the number of neutrons, subtract the atomic number from the atomic mass:**

Example for carbon:                      Atomic mass: 12 (rounded)                      Number of neutrons:  $12 - 6 = 6$

**To find the number of electrons, look at the atomic number:**

Example for carbon:                      Atomic number: 6                      Number of electrons: 6

*\*Complete the table for the elements with atomic numbers 1-10.*

ELEMENT NAME	ATOMIC NUMBER	ATOMIC MASS	PROTONS	NEUTRONS	ELECTRONS
	1				
	2				
	3				
	4				
	5				
	6				
	7				
	19				
	35				
	47				