**Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Notes: Introduction to Chemistry**

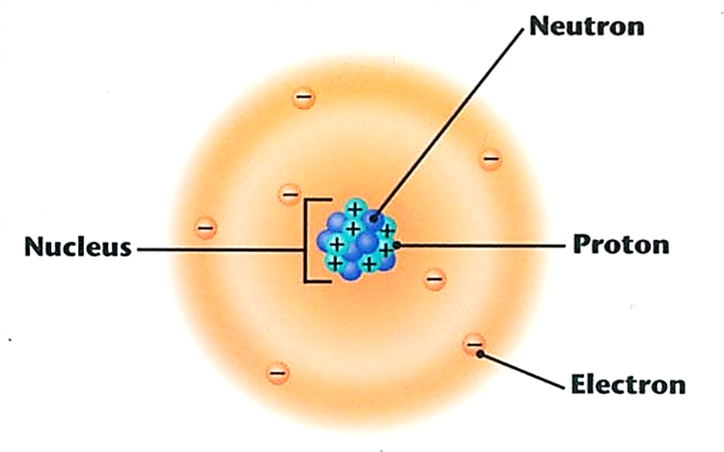
**What are you made of? Matter!**

**Matter:** anything that occupies \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and has \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

* The “stuff” of the universe

**What makes up Matter? Atoms!**

**Atom:** The smallest possible\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ that has the properties of that element.



***Made of 3 particles:***

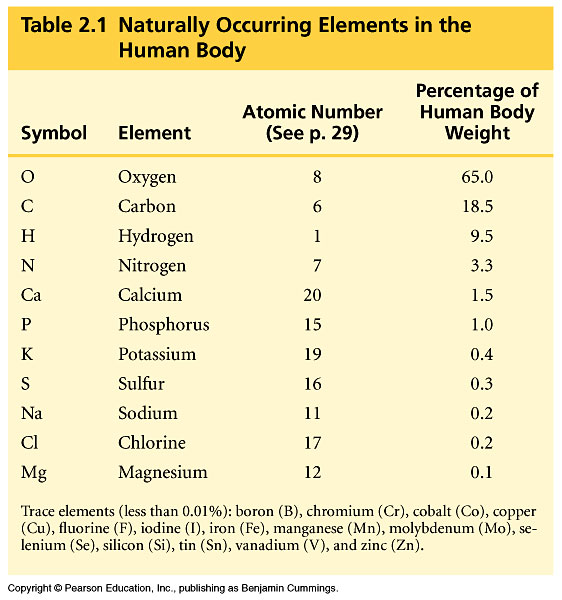
**Proton: A subatomic particle in the \_\_\_\_\_\_\_\_\_\_\_\_\_\_ with a single \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Neutron: A subatomic particle in the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ with \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.**

**Electron: A subatomic particle that quickly moves \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ with a single \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.**

**Chemical Terms:**

**Element:** a pure substance made of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_ that cannot be\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ into other substances by chemical means.



Every element has a symbol containing 1 or 2 letters

Ex: Carbon = \_\_\_\_\_\_\_\_\_ Sodium= \_\_\_\_\_\_\_\_

Hydrogen= \_\_\_\_\_\_\_\_\_ Chlorine= \_\_\_\_\_\_\_

Oxygen = \_\_\_\_\_\_\_\_ Calcium= \_\_\_\_\_\_\_\_

Nitrogen= \_\_\_\_\_\_\_\_\_ Phosphorus= \_\_\_\_\_\_\_\_

**Atomic Number:** the # of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ in the nucleus-- different for each element!

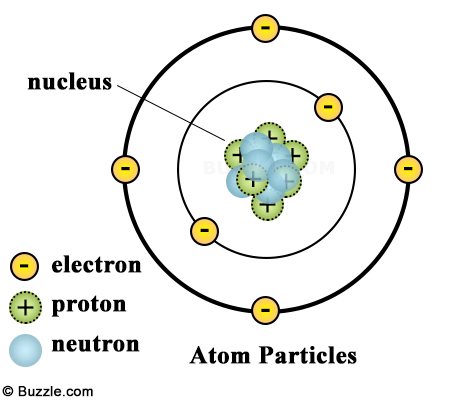
In a regular uncharged atom, # of protons = # of electrons

**ENERGY LEVELS IN ELECTRONS**

Electrons are arranged in **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (also called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_or Electron Shells)**

The number of **Valence Electrons**, electrons in the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, determines how \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

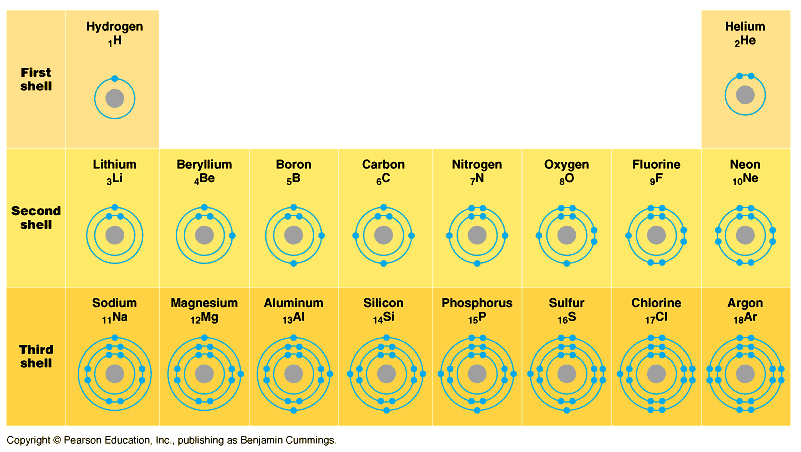
Atoms are most reactive when the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

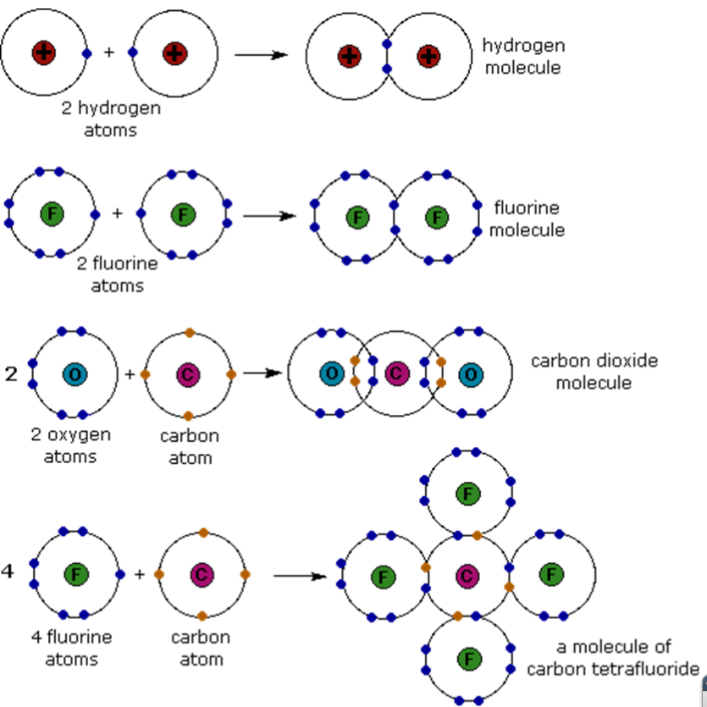
(the Atom “wants” to have a full outer shell!)

**# of Electrons each energy level can hold:**

|  |  |
| --- | --- |
| **\_\_\_\_\_st Energy Level:** | **\_\_\_\_\_ Electrons** |
| **\_\_\_\_\_nd Energy Level:** | **\_\_\_\_\_ Electrons** |
| **\_\_\_\_\_rd Energy Level:** | **\_\_\_\_\_ Electrons** |

**Bohr Model shows the organization of the electrons:**





**Chemical Bonding**

Atoms interact such that they all try to have

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_(energy levels).

The attractive forces between atoms in a molecule are **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.**

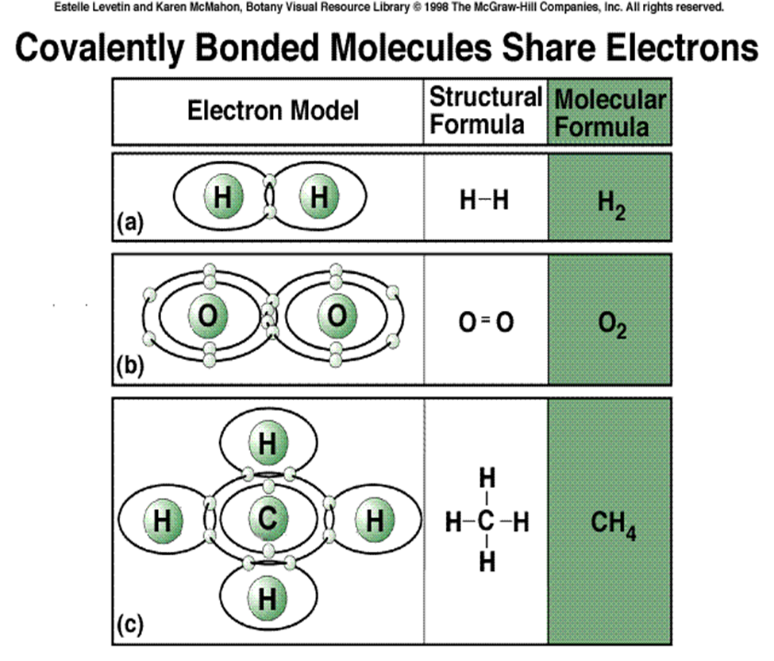
**Chemical Bonding Vocab:**

**Molecule:** A particle with \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ bonded together.

**Compound**: Molecule with at least \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. They can have very different properties from the elements that make them up.

**Covalent Bonds:** Two atoms ­­­­­­­­­­­­­­­­­­­­­­­­­\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ one or more pairs of electrons

* Each ends up with \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (at least part of the time)



**Draw a Covalent Bond:**

|  |
| --- |
| **Hydrogen + Hydrogen** |
|  |

**Ionic Bonds** *-* One atom ***loses*** electrons; the other ***gains*** electrons

**Ion**= any atom/molecule with a charge (positive or negative)

–Atom that loses electrons has a *net positive charge*

–Atom that gains electrons has a *net negative charge*

–**Unlike charges attract**

•An ionic bondis formed from attraction between the positive and negative ion.

