**KEY - Matter Study Guide (6.P.2.1)**

**Structure on an Atom**

* The **NUCLEUS** is the center of the atom
* **NEUTRONS** and **PROTONS** are both found in the nucleus of an atom
* **ELECTRONS** are found orbiting the nucleus
* Neutrons charge = **NEUTRAL**
* Protons charge = **POSITIVE**
* Electrons charge = **NEGATIVE**
* The **ATOMIC NUMBER** tells us how many electrons and protons an element has
* You can subtract the atomic number from the atomic mass (rounded) to find the number of **NEUTRONS**

**Element/Atom/Molecule/Compond**

* Basic substance made of a single type of atom? **ELEMENT**
* Smallest amount of an element? **ATOM**
* Two or more atoms chemically joined together? **MOLECULE**
* A molecule that contains more than one element? **COMPOUND**

**Properties of Elements**

* **ELEMENTS** are grouped together based on properties
* These include boiling point, melting/freezing point, hardness, color, density, texture, solubility
* If a **METAL**, additional properties include malleability, conductivity and attraction to magnets

**Periodic Table**

An organizational system for elements. Elements are arranged in rows going from right to left called **PERIODS**and columns going up and down called **GROUPS**.

**PTE -** **General Information**

* **ATOMIC MASSES** generally increase as you move from left to right, top to bottom
* The atomic **NUMBER** determines the number of **ELECTRONS** and **PROTONS** in the atom
* The atomic mass minus the atom number determines the number of **NEUTRONS** in the atom
* The arrangement of the **ELCTRONS** determine the chemical properties of an element
* The smallest particle of an element is called an **ATOM**
* An **ELEMENT** is a pure substance
* Regardless of the amount of a certain element, it will still have identical **PROPERTIES** (ex. Melting point, boiling point, freezing point, density…)
* Elements are considered the building blocks to everything because they can be combined to make different **SUBSTANCES**

**Periods (rows)**

* Elements in the same **PERIOD** have the same number of energy levels.
* The period number is the same as the number of **ENERGY LEVELS**

**Groups (columns)**

Elements in the same **GROUP** have similar properties because they have a similar electron arrangement.

* **Metals**are on the left hand side of the table
* **Non-metals**are on the right-hand side of the table.
* **Metalloids**are between the metals and non-metals.

**Groups/Valence Electrons**

* Group I or Alkali metals - Elements whose atoms have 1 outer-shell electron; they are very *reactive*
* Group II or Alkaline Earth Metals - Elements whose atoms have 2 outer-shell electrons
* Group III - Elements whose atoms have 3 outer-shell electrons
* Group IV - Elements whose atoms have 4 outer-shell electrons
* Group V - Elements whose atoms have 5 outer-shell electrons
* Group VI - Elements whose atoms have 6 outer-shell electrons
* Group VII or Halogens - Elements whose atoms have 7 outer-shell electrons
* Group 0, sometimes called group 8 or Noble Gases - Elements whose atoms have full outer shells so they are very *unreactive*.