

## Notes: Atomic Structure and Periodic Table

### Atomic Structure

- An atom is the smallest particle of matter, made up of protons, neutrons, and electrons.
- Protons and neutrons make up the nucleus, and Electrons are outside the nucleus
- The atomic number tells us the number of protons, and electrons that are found in that element.
- To find the number of neutrons,  $\text{Mass Number} - \text{Atomic number}$
- On the P.T. we can find an element's name, symbol, atomic number and atomic mass.

### Periodic Table

- Mendeleev, first to publish a table of elements. Today we use a table based on the elements' atomic numbers.
- Groups are vertical columns, also known as families. Periods are horizontal.
- Elements can be classified into 3 main sections, the metals, the nonmetals, and the metalloids.
- Metals are good conductors of heat, they are usually shiny and silver in color, can be shaped or molded. All metals except mercury are solid at room temperature.
- Nonmetals are poor conductors, vary in color, they are usually brittle, and are found in all states of matter.
- Metalloids are solid at room temperature, they conduct heat and electricity but not as well as a metal can.
- Elements within the same group have similar chemical and physical properties.
- Valence means outermost.
- Main groups elements are in groups 1,2, and 13-18, transition metals are in groups 3-12
- Alkali metals, the most reactive group of metals, found in group 1
- Alkaline earth metals, reactive metals found in group 2
- Halogens, nonmetals, found in group 17, The most reactive group of nonmetals.
- Noble gases, found in group 18, have 8 valence electrons (except helium, he has only 2), do not react with other elements. They are stable by themselves.
- Lanthanides and Actinides are found at the bottom of the table, many of these are radioactive.