

## The Periodic Table

### I. Types of Elements:

A. Metals – have luster, conduct heat and electricity well, are malleable (can be bent/reshaped) and ductile (drawn into a wire)

B. Nonmetals – are not good conductors at all and they tend to be brittle

C. Metalloids – Possess some properties of metals and nonmetals

### II. States of Matter

A. Solid – most compact state; metals (except mercury) are solids. Atoms are tightly packed and close to each other

B. Liquid – Atoms are close to each other, yet far enough apart from each other so that they can move around one another. Only mercury and bromine are liquids.

C. Gas – Atoms are very far apart from each other. There is total freedom of movement for particles. Many nonmetals are gases.

### III. Orienting the Table

A. periods – are the seven rows on the table. Parts of two periods are special:

1. Lanthanide series
2. Actinide series

B. groups – are the 18 columns on the table. There are many special groups:

1. Group 1 (except H) – Alkali metals
2. Group 2 – Alkali Earth Metals
3. Groups 3-12 – Transition Metals
4. Group 16 – Chalcogens
5. Group 17 – Halogens
6. Group 18 – Noble Gases

#### IV. Atomic Size

A. The largest atoms are always to the left of a period and to the bottom of a group.

B. The atoms USUALLY show an increase by atomic mass, nickel/cobalt and tellurium/iodine are exceptions.

## V. Diatomic Elements

A. diatomic elements are those that always appear as two atoms bonded together.

B. the seven diatomic elements are:

Hydrogen             $H_2$

Nitrogen             $N_2$

Oxygen               $O_2$

Fluorine             $F_2$

Chlorine             $Cl_2$

Bromine             $Br_2$

Iodine                $I_2$