ELEMENT CLASSES

Alkali Metals:

- All Alkali metals have 1 valence electron
- Alkali metals are never found pure in nature: they are too reactive
- Reactivity of these elements increases down the group

Alkaline Earth Metals:

- All alkaline earth metals have 2 valence electrons
- Alkaline earth metals are less reactive then alkali metals
- Alkaline earth metals are not found pure in nature; they are too reactive
- The word “alkaline” means “basic”
- Common bases includes salts of the metals
- $Ca(OH)_2$
- $Mg(OH)_2$

Properties of Metal:

- Metals are good conductors of heat and electricity.
- Metals are malleable.
- Metals are ductile.
- Metals have high tensile strength.
- Metals have luster.

Transition Metals:

- Copper is a relatively soft metal, and a very good electrical conductor.
- Mercury is the only metal that exists as a liquid at room temperature.

Properties of Metalloids:

- They have properties of both metals and nonmetals.
- Metalloids are more brittle than metals, less brittle than most nonmetallic solids.
- Metalloids are semiconductors of electricity.
- Some metalloids possess metallic luster.

Silicon-a metal:

- Silicon has metallic luster.
- Silicon is brittle like a nonmetal.
- Silicon is a semiconductor of electricity.
- Other metalloids include, boron, germanium, arsenic, antimony.

Nonmetals:

- Nonmetals are poor conductors of heat and electricity.
- Nonmetals tend to be brittle.
- Many nonmetals are gases at room temperature.
- Carbon, the graphite in “pencil lead” is a great example of a nonmetallic element

Examples of nonmetals:

- Sulfur was once known as “brimstone”
- Microspheres of phosphorus, a reactive nonmetal.

- Graphite is not the only pure form of carbon. Diamond is also carbon; the color comes from impurities caught within the crystal structure.

Halogens:

- Halogens all have 7 valence electrons.
- Halogens are never found pure in nature; they are too reactive
- Halogens in their pure form are diatomic molecules (F_2, Cl_2, Br_2, and I_2)
- Chlorine is a yellow-green poisonous gas.

Nobel Gases:

- Nobel gases have 8 valence electrons (except helium, which has 2)
- Nobel gases are only found pure in nature-they are chemically unreactive.
- Colorless, odorless, and unreactive; they were among the last of the natural elements to be discovered.