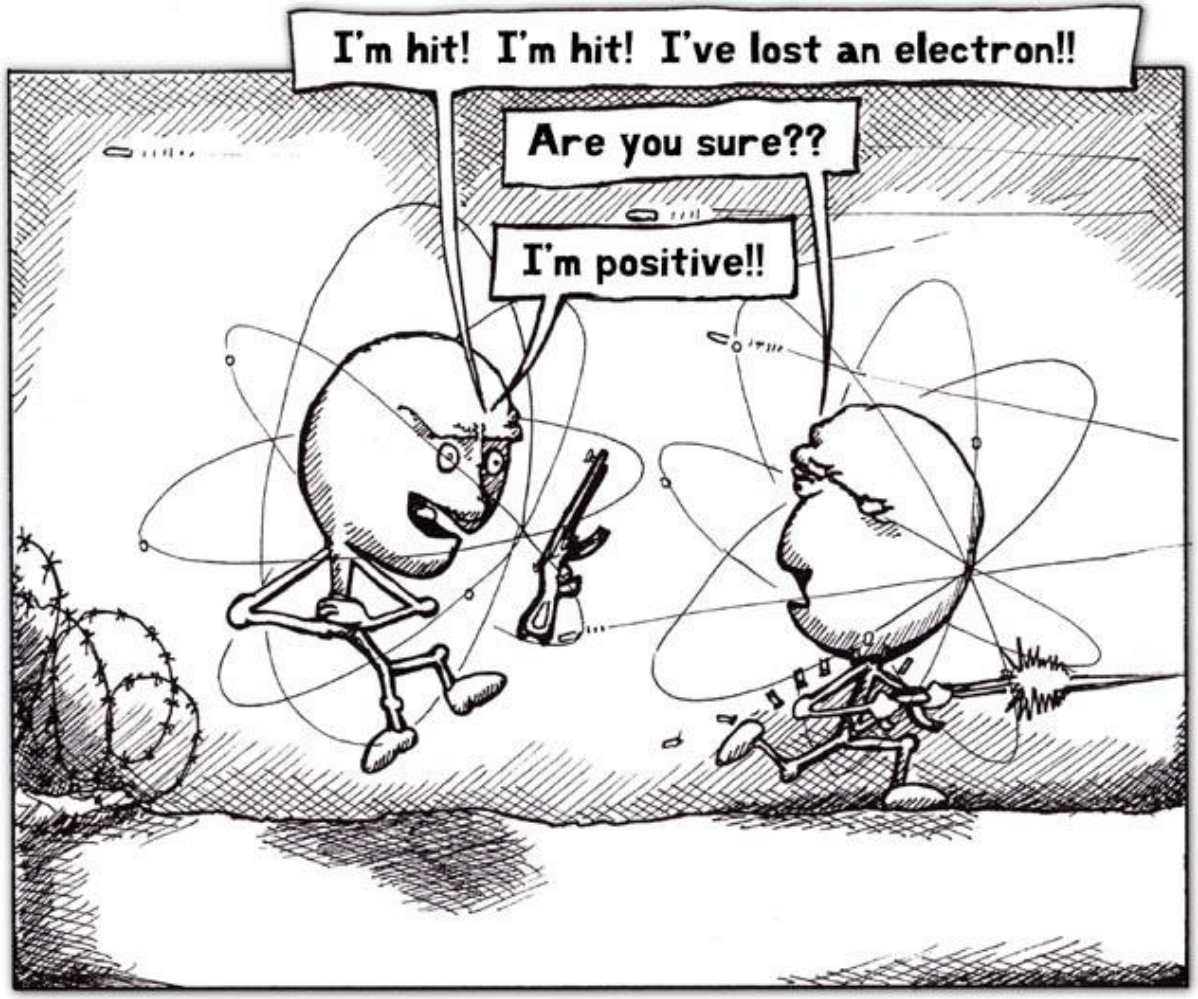
2.2 Periodic Table

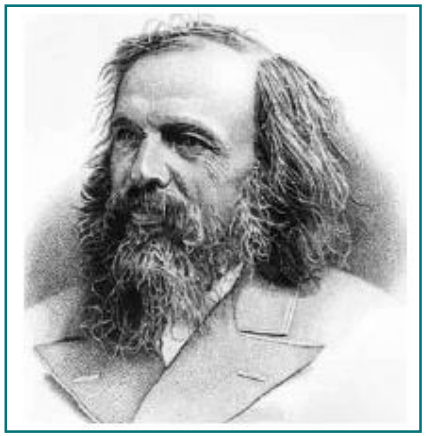


Another casualty in the War of the Atoms

- Hand in lab from last class
- Notes

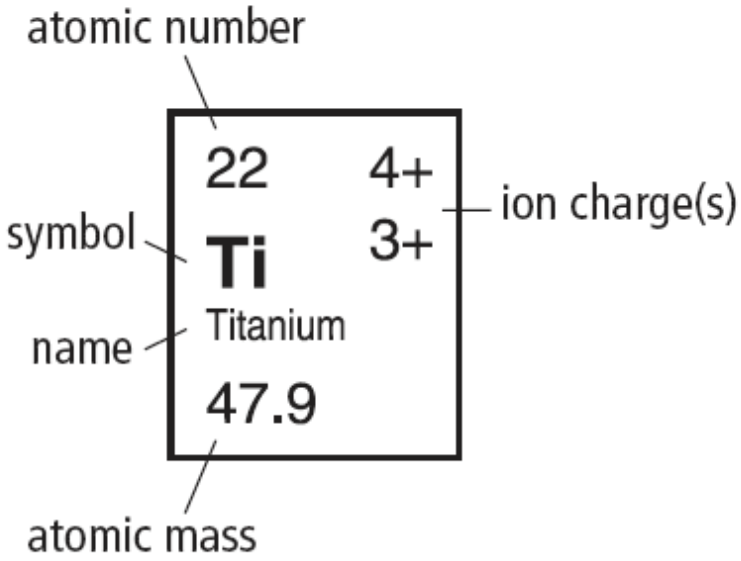
2.2 Periodic Table

- Origin of the periodic table
  - Chemists in the 10th century wished to organize elements
  - Attempts focused on grouping elements with similar properties
  - In 1867, Dimitri Mendeleev found patterns in the elements and organized them into table
  - The resulting table had holes for elements not yet discovered



Periodic Table

- The Periodic Table provides information on the physical and chemical properties of elements

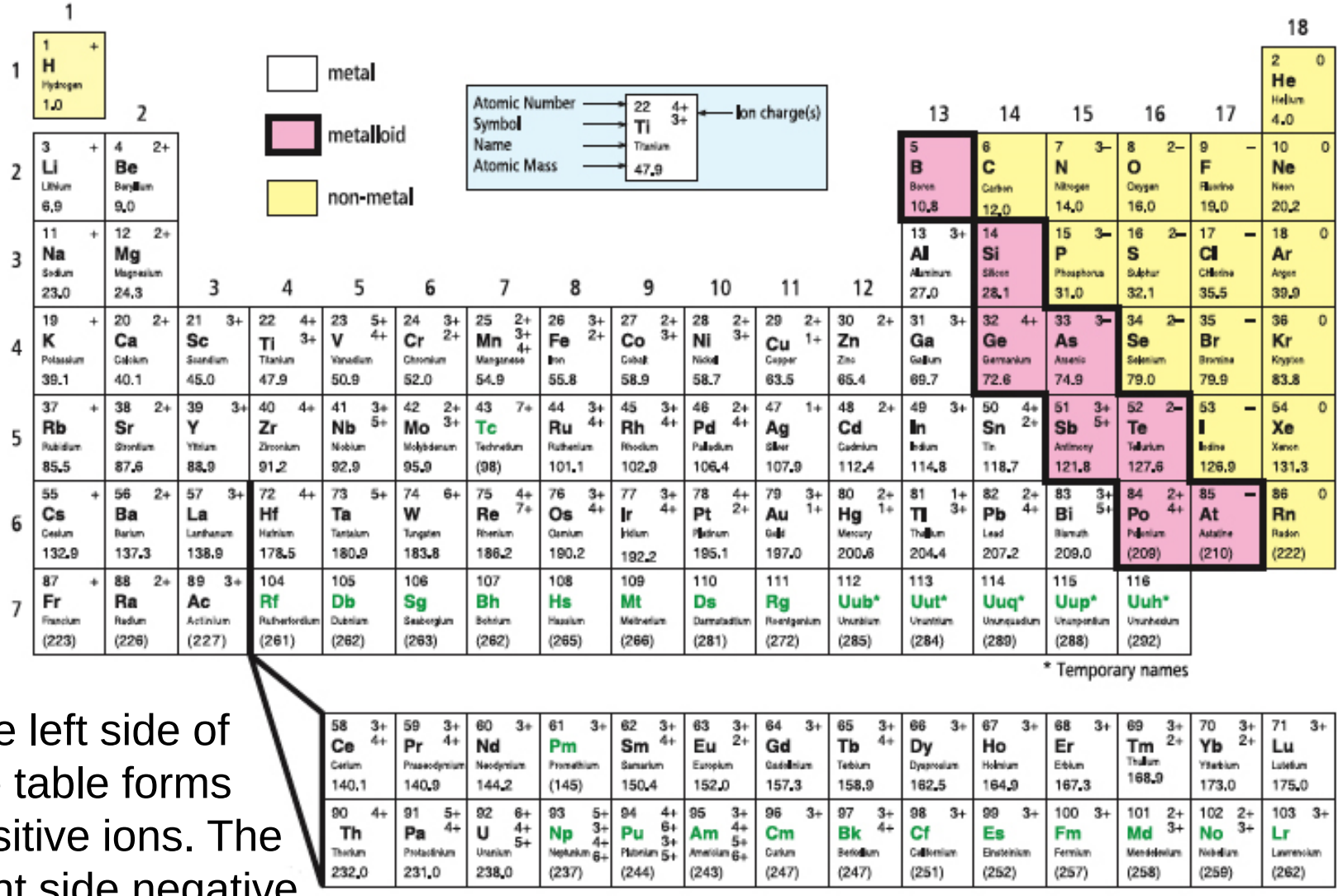


Atomic Mass - mass of average atom (including its isotopes) and is calculated using the number of protons (atomic number) and neutrons. We always round to the nearest whole number for calculations.
Atomic Number - number of protons
Ion Charge - electric charge that forms when an atom gains or loses electrons

Isotopes

- Isotopes are different atoms of a particular element that have the same number of protons but different numbers of neutrons.
  - This means they have a different mass number
- Carbon-12 ← number of nuetrons
- Carbon-13
- Carbon-14

Periodic Table



The left side of the table forms positive ions. The right side negative

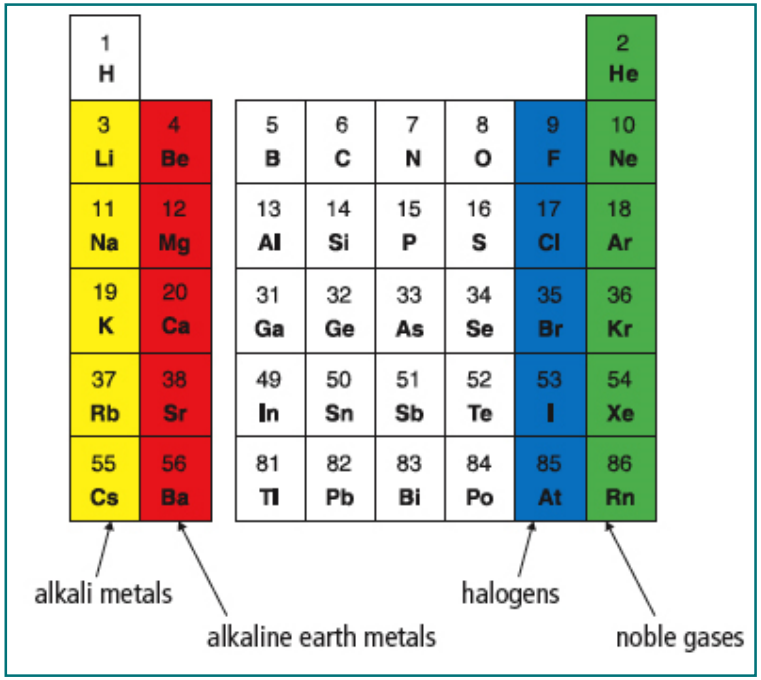
Metals, Non-metals, Metalloids

	State at Room Temperature	Appearance	Conductivity	Malleability and Ductility
Metals	• solid except for mercury (a liquid)	• shiny lustre	• good conductors of heat and electricity	• malleable • ductile
Non-metals	• some gases • some solids • only bromine is a liquid	• not very shiny	• poor conductors of heat and electricity	• brittle • not ductile
Metalloids	• solids	• can be shiny or dull	• may conduct electricity • poor conductors of heat	• brittle • not ductile

Periods and Families

- Each horizontal row in the periodic table is a **period**
- Vertical columns form groups or **chemical families**

  - **Alkali metals** - highly reactive group 1
  - **Alkaline earth metals** - group 2, burn in air if heated
  - **Halogens** - group 17, highly reactive non-metals
  - **Noble gases** - group 18, stable and unreactive non-metals



Some questions

- State how many protons are present in each of the following atoms
  - Silicon chromium and iodine

- What is the most common charge of chromium?

Task for at home

- What is the difference between a bohr model and an electron cloud model?
  - Is one more correct than the other?
  - Sketch a diagram of each type of model of the element you are studying for your poster.

  - Lab/project time.