Section 6.1 - Organizing the Elements

Mendeleev's Periodic Table

- Mendeleev arranged the known elements in order of increasing atomic mass
- he left gaps in the table where there 'should' be something that had not yet been discovered and predicted their properties

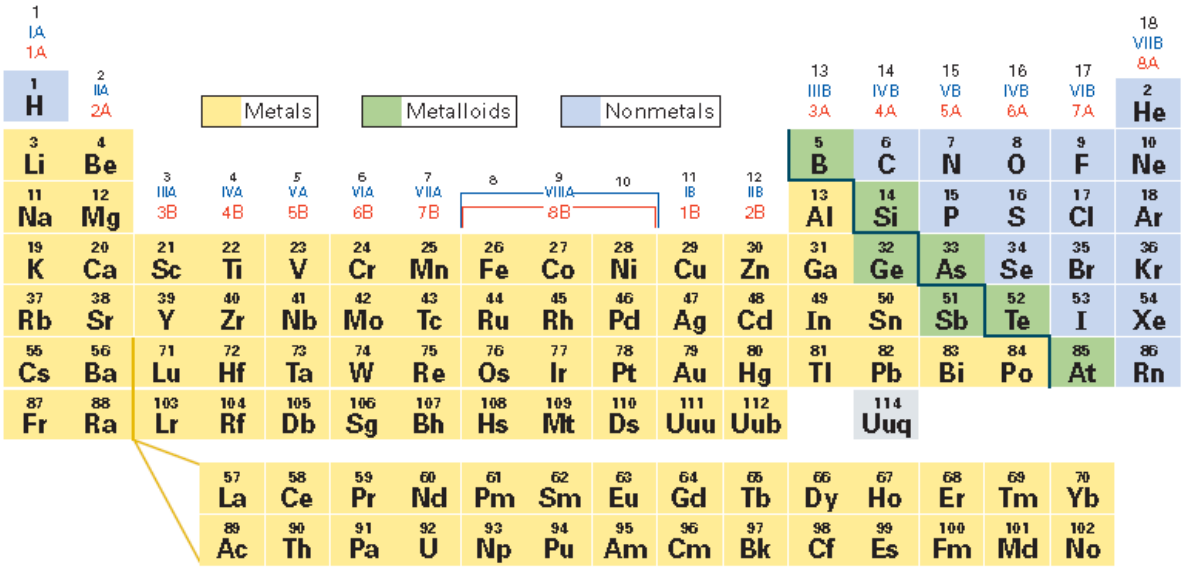
	Prediction	Discovery	
atomic mass-	68	69.9	Gallium
density (g/cm^3)-	5.9	5.94	
melting point-	low	30°C	
solubility in acid-	medium	medium	
atomic mass-	72	72.3	Germanium
density (g/cm^3)-	5.5	5.47	
melting point-	high	2830°C	
solubility in acid-	low	low	

The Periodic Law

- Mendeleev's table was developed before we knew about protons, electrons and neutrons
- masses of some of the elements that were on the table seemed out of order

In the modern Periodic Table, elements are arranged in order of increasing atomic number.

- elements within a column, or **group**, have similar properties
- as you move from left to right, within a period, the properties change
- elements on the modern table show a periodic repetition of properties



Metals, Nonmetals and Metalloids

Metals

- approx. 80% of the known elements are metals
- good conductors of heat and electricity
- high lustre (shiny)
- all are solids at room temperature (except Hg-mercury)
- many are ductile (drawn into wires)
- most are malleable (hammered into shapes)

Nonmetals

- most are gases at room temperature, a few are solids, and one is liquid
- in general, nonmetals are poor or non-conductors of heat and electricty (Carbon is the exception)
- solid nonmetals tend to be brittle and have low lustre

Metalloids

- similar properties to metals AND nonmetals
- ex: pure silicon is a poor conductor of electricity but a small amount of boron mixed with the silicon makes it a good conductor