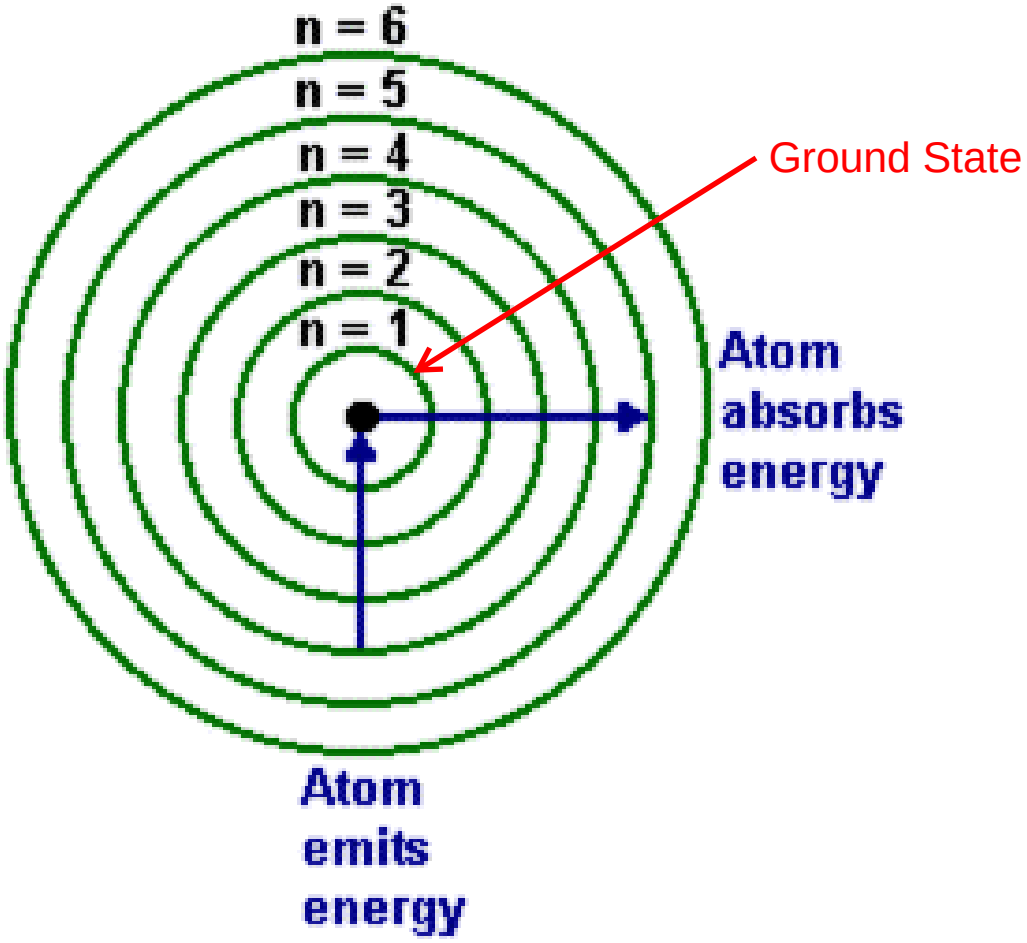
Bohr Model of the Atom

- used the ideas of Dalton, Thomson and Rutherford
- electrons orbit the nucleus but only in "allowed" regions called orbits



- electrons can orbit in n=1, n=2, etc but cannot orbit in between these orbits
- highly mathematical in nature and uses a wave/particle duality for electrons!!

- every orbit is at a specific distance and energy, the closer the orbit is to the nucleus the lower the energy (n=1 is lowest in energy and is called the ground state - best place to be)

- if an atom absorbs energy (from heat, electricity or the correct colour of light) an electron will move outward from the nucleus (outwards transition) to a higher orbit (i.e. n = 1 to n = 3) and is now an excited electron

- an excited electron will quickly fall back toward the nucleus (inward transition) and will give of the energy that has been gained as a single photon (the ground state, n=1)

- since each orbit has a specific energy, the transitions between orbits also have a specific energy and hence the photons produced by a given inward transition will all be of that same specific energy (and hence colour) which leads to a particular single line in a line spectra for that atom

- since every element has a unique set of orbits with unique distances and energies, every element has a different set of possible energy transitions and hence a unique line spectra (elemental fingerprint)