Atoms

1. Atoms are made up of protons, neutrons, and electrons.
2. $1.67 * 10^{-27}$ kg = proton mass
3. Neutron mass is about the same as proton.
4. Electron mass is about 1/2000 that of a proton.
5. Protons and neutrons are in the nucleus with electrons orbiting around them.
6. Atom is held together by electromagnetic forces, not gravity.
7. Electrons can only orbit in certain specific orbits
8. Each orbit corresponds to different energies.
9. As the electron moves further away, the energy goes up.
10. Energy of an electron of an atom is quantized only in certain specific values.
11. Electrons can jump to another energy level, but not between two energy levels.
12. Electrons gain energy from a photon by absorbing it, or if atoms collide together.
13. Excitation is the process of electrons moving up in energy levels.
14. An excited atom is an atom who has electrons moved up in energy levels.
15. Electron will spontaneously jump down to lower level
16. To get rid of energy to jump down, electrons emit a photon of light.
17. Sometimes, it can jump out of atom's orbit if enough energy is applied, this is called ionization.
18. An ion is an atom which has lost electrons.
19. An electron can only absorb a photon with enough energy to move up a level, but not in between.
20. The spectrum of the atom is show by the fact that the electron can only emit a photon of a certain energy.
21. Only certain wavelengths are absorbed, which makes a dark line spectrum.
22. If you were looking at a 90 degree angle, you would not see dark line spectrum.
23. The wavelength absorbed is the wavelength emitted but in a random direction, or the wavelength could be a divisible where the energy could be broken up into different wavelengths, but the sum total remains the same.
24. Kinetic energy of motion can also be converted into radiative energy.
25. Atoms as we know them is represented by the Bohr model.
26. The Bohr model incorporates the Heisenberg uncertainty principle, which says an electron's position and velocity can never be measured at the same time.
27. This means that energy levels have a thickness, which means it could be a range of wavelengths that could be emitted.
28. The Doppler shift also broadens the lines.