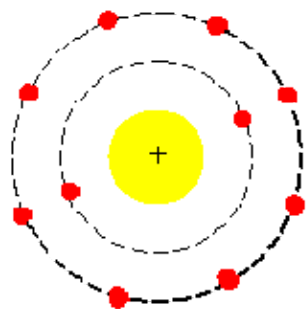
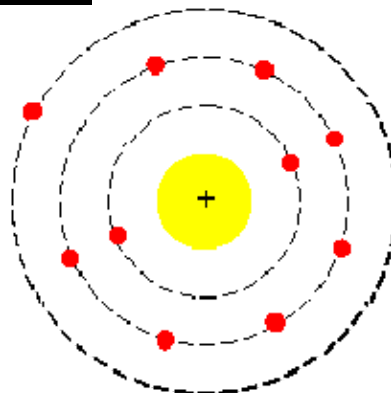


Ground State vs. Excited State



Neon
2-8
(ground state electron configuration)



Neon
2-7-1
(excited state electron configuration)

*Notice that one electron from the 2nd energy level has moved to the 3rd energy level

Ground State = electrons in _____ possible (the configuration _____)

→ ground state electron configuration for Li is 2-1

Excited State = electrons are _____ (_____ configuration _____)

→ excited state electron configuration for Li could be 1-2, 1-1-1

Distinguish between ground state and excited state electron configurations below:

Bohr Electron Configuration	Ground or Excited state?
2-1	Ground
2-0-1	Excited
1-1-1	
2-7-3	
2-8-2	
2-8-8-2	
2-8-17-6	
2-8-18-8	
2-6-18-1	
2-5-18-32	

***The greater the distance from the nucleus, the greater the energy of the electron

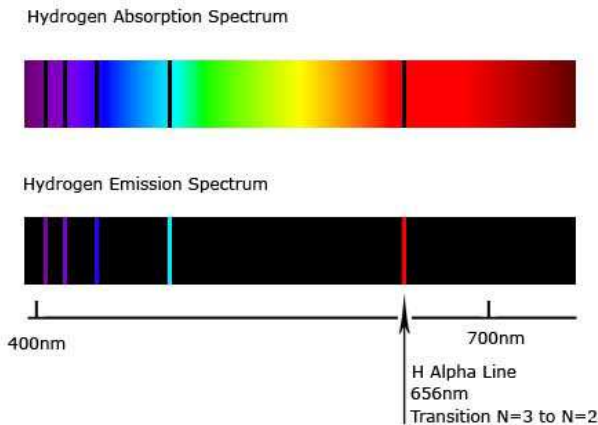
- When _____ they jump to a _____ energy level or an _____.
 - ✓ This is a very _____ condition
- _____ rapidly _____ or _____ to a _____ energy level
 - ✓ When excited electrons fall from an excited state to lower energy level, they release energy in the form of _____.

_____ → _____

- Energy is _____
- _____ is produced

_____ → _____

- Energy is _____
- _____ is produced



_____ show the specific wavelengths of light being _____ by the electrons (move to higher energy level)

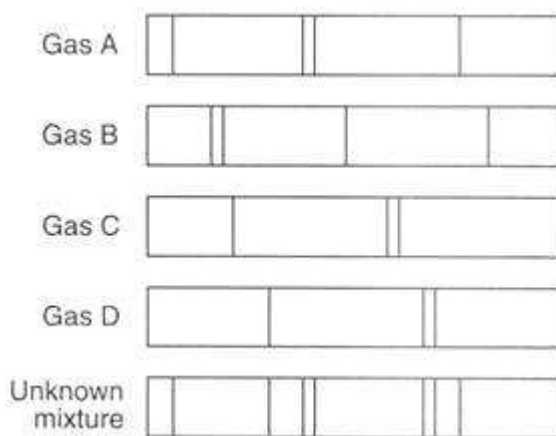
_____ show the specific wavelengths of light being _____ by the electrons (falling down)

- ✓ Balmer Series: electrons falling from an _____ down to the _____ give off _____ light (AKA "Bright Line _____" or "Visible Light _____")
 - Different elements produce different colors of light or _____.
 - These spectra are _____ for each element (just like a human fingerprint is unique to each person).
 - We use spectral lines to identify different elements.

Practice:

1. Which of the following is a ground state electron configuration?
 - a. 2-7-2
 - b. 2-7-3
 - c. 2-6-1
 - d. 2-8-1
2. Which of the following is an excited state electron configuration?
 - a. 2-8-2
 - b. 2-8-3
 - c. 2-6-1
 - d. 2-8
3. Give one possible example of an excited state electron configuration for oxygen: _____
4. When atoms of an element in the ground state absorb enough energy, some of their electrons may
 - a. fall back to the ground state and give off energy in the form of light.
 - b. fall back to an excited state and give off energy in the form of light
 - c. jump to the ground state.
 - d. jump to an excited state.
5. When excited electrons lose enough energy, they will
 - a. fall back to the ground state and give off energy in the form of light.
 - b. fall back to an excited state and give off energy in the form of light
 - c. jump to the ground state.
 - d. jump to an excited state.

6. A bright-line spectrum is produced by
- electrons emitting energy and falling back to the ground state.
 - electrons absorbing energy and falling back to the ground state.
 - electrons absorbing energy and jumping to an excited state.
 - electrons emitting energy and jumping to an excited state.
7. Based on the known bright line spectra produced by the four gases below, which gases are present in the unknown mixture?



Gases present: _____