

## Atomic Theory Terms to Know....

Orbital	Electronegativity	Electron geometry
Valence electron	Atomic Radius	Electron Groups
Ionic bond	Periods	Molecular Geometry
Covalent bond	Electromagnetic spectrum	Lone Pair of electrons
Subshell	Energy	Bond angles
Energy Level	Plank's constant	Lewis Dot Diagram
Electron Configuration	Wavelength (Lambda)	
Ionization	Frequency	

Know these and you will do great on the test!

**Good luck!**

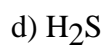
### Atomic Theory Review Booklet

1. For each of the following sets of atoms, decide which is larger and which is smaller.
  - a. Li, Na, F
  - b. Li, Br, K
  
2. For each of the following sets of atoms, decide which has the highest and lowest ionization energies.
  - a. Mg, Ca, S
  - b. Mg, Cl, Ba
  
3. Write the formula and Lewis Diagram for these ionic compounds.
  - a) magnesium and chlorine
  
  - b) aluminum and oxygen
  
  - c) strontium and sulfur

4. Complete the following table:

Empirical Formula	Ionic or Covalent bonding	Lewis diagram
LiF		
CaF <sub>2</sub>		
PF <sub>3</sub>		
Na <sub>2</sub> S		
Al <sub>2</sub> O <sub>3</sub>		

5. Write Lewis diagrams for the following covalently bonded molecules.



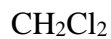
6. Let's play the VSEPR game ! For each of the following species,

a) Draw a valid Lewis diagram.

b) Describe the molecular geo.

c) What is the bond order?

d) Give the approx bond angles .



7. Determine the empirical formula, name and Lewis diagram for the following ionic compounds:
- A) Al and F
  - B) Ba and O
  - C) K and S
  - D) Rb and N
  - E) Ca and Cl
8. Calculate the total number of sublevels that can be found in the first 2 energy levels?
9. Calculate the total number of electrons that can be found in the first 3 energy levels?
10. Calculate the total number of orbitals that can be found in the 4th energy level?
11. The wavelength of a certain frequency of light is  $6.5 \times 10^{-4}$  cm, what is the frequency in hertz?
12. The frequency of a band of light from the UV region of hydrogen's line spectrum is  $2.2 \times 10^4$  hertz. What is the wavelength in cm?
13. Find the energy of blue light that has a frequency of  $6.17 \times 10^{11}$  waves / sec.
14. If the frequency of a photon of light is  $6.0 \times 10^{11}$  Hz, what is the energy of this light photon in joules?

15. Name the neutral element that corresponds to each of the following electron configurations:



## More Fun With Lewis Structures

*For each of the following compounds or ions, draw the Lewis structures (with resonance structures, if applicable), show the bond angles and molecular shapes.*

