General Chemistry
Friday 10/30/15

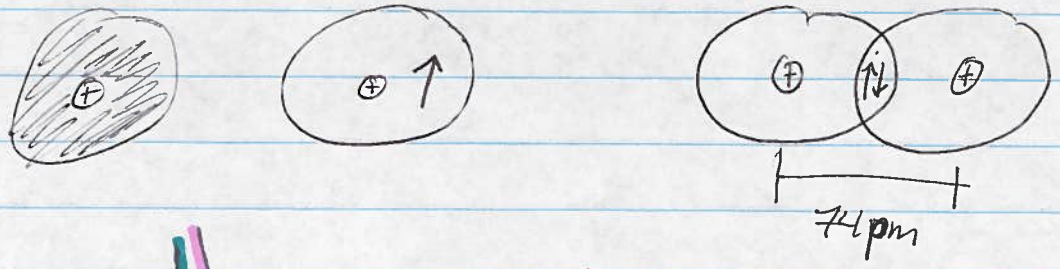
Today: Chp 7 (not on test)

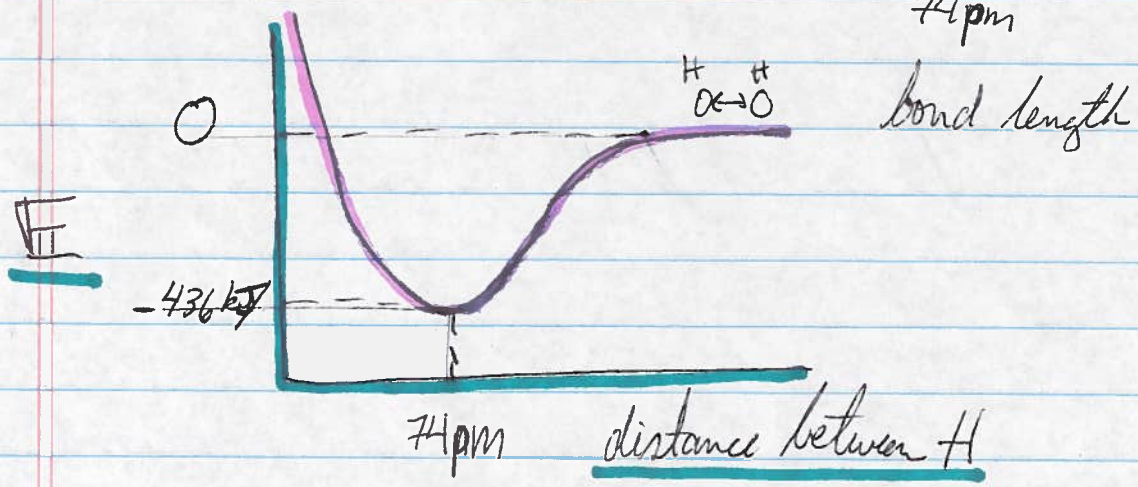
Sunday: Review @ 7pm in Eppley 110

Monday: CK4
doors open at 9:15
Last day to drop with W

Tuesday: Expt 9 Molecular Structure
Bring Lecture Notebooks
Lecture Only Students can come

H atom 1s $\frac{1}{1s}$





$H(g) + H(g) \rightarrow H_2(g)$ $E = -436$ kJ/mol

$H_2(g) \rightarrow H(g) + H(g)$ $E = 436$ kJ/mol * Bond dissociation reaction

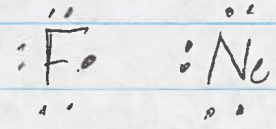
Breaking bonds is always endothermic.

Making bonds is always exothermic.

Molecule	Bond length	Bond Strength
H_2	74 pm	436 kJ/mol H_2
F_2	141	159
Cl_2	199	243
Br_2	228	193
I_2	267	151
C-C	154	350
C=C	134	728
C≡C	120	965

Comparing Ionic and Cov Molecular

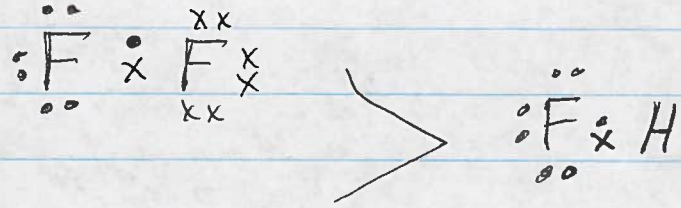
	NaCl	HCl	Cl_2
appearance	solid white	gas, colorless	green gas
mp	801°C	-115°C	-101°C
bp	1465°C	-85°C	-35°C
sol in H_2O	soluble	soluble	only a little soluble

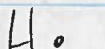


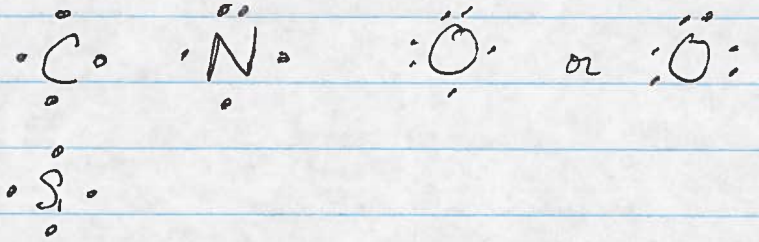
Valence

$2s^2\ 2p^6$

$8e^-$ octet



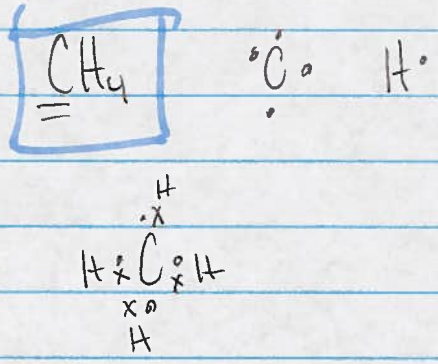




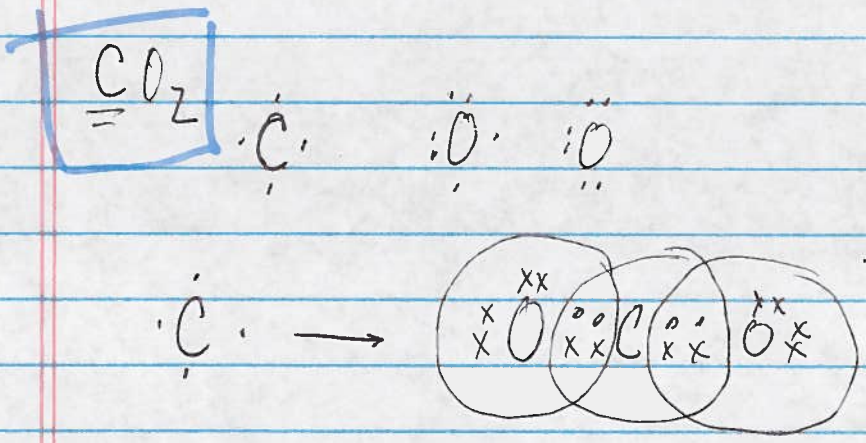
Steps to draw Lewis dot structures

1. Sketch atoms (ie :Ö·)
2. Central atom is usually 1 atom $\underline{C}H_4$
   * adjust ions for charge
   NH_4 $[\cdot\ddot{N}\cdot]^+$
3. Add other groups one at a time and try to make both atoms have an octet

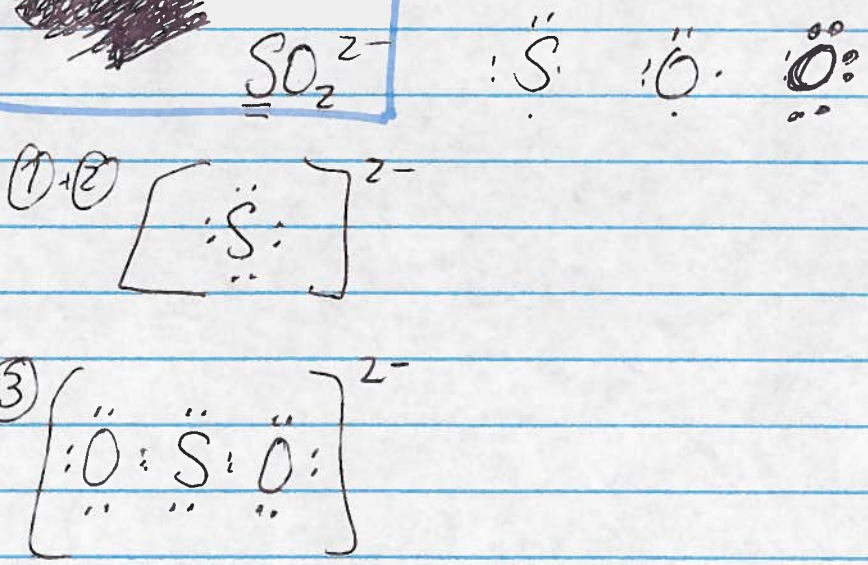
CH_4



CO_2



SO_2^{2-}



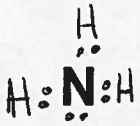
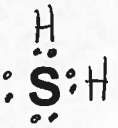
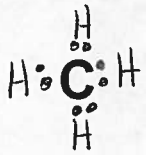
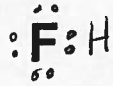
Folder Activity Chapter 7 Number 1 **30 October 2015**

Printed Name: Monika Satkauskas Chm 203 Student number: TA

1. Sketch Lewis dot structures for these atoms. How many bonds does each need to make in order to form an octet?

				
Bonds needed: 3	Bonds needed: 1	Bonds needed: 2	Bonds needed: 4	Bonds needed: 1

2. Use the information above to sketch the Lewis dot structures of the compounds expected between the following atoms bonded to hydrogen atoms.

				
Formula NH_2: NH_3	Formula BrH_2: BrH	Formula SH_2: SH_2	Formula CH_2: CH_4	Formula FH_2: FH

3. How much energy does it take to break each of these bonds? Include units!

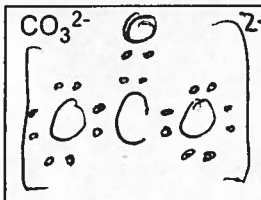
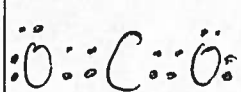
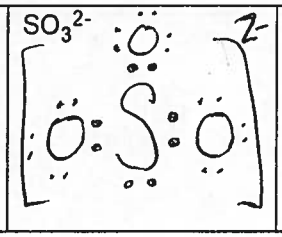
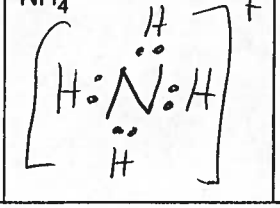
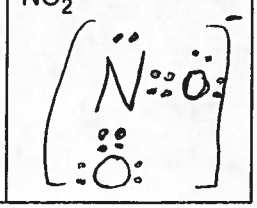
(a) N – H (b) Br – H (c) S – H (d) C – H (e) F – H

390 kJ/mol 366 kJ/mol 340 kJ/mol 410 kJ/mol 570 kJ/mol

4. Which of these bonds is the most polar?

(a) N – H (b) Br – H (c) S – H (d) C – H (e) F – H

5. Sketch Lewis dot structures for each of these species.

CO_3^{2-} 	CO_2 	SO_3^{2-} 	NH_4^+ 	NO_2^- 

6. Sketch the structure of the following compounds. (a) Methanal has the formula COH_2, with carbon in the center and the other three atoms bonded to it. (b) Hydrogen peroxide has formula O_2H_2 (usually written H_2O_2), and (c) Ethyne, commonly called acetylene, with formula C_2H_2.

(a) methanal	(b) hydrogen peroxide	(c) ethyne