

*Based on group

Name _____

College Prep Chemistry of the Earth

Assignment 3I – Unit 3 Review

20 Points

Complete the following chart for lewis dot structures for both neutral and ion structures

Neutral Atom	Lewis Dot Structure	Valence Electrons
Al		group 13 3
P		group 15 5
Br		group 17 7

Ion	Lewis Dot Structure	Valence Electrons
Al ³⁺	[Al] ³⁺	+ ion 0
P ³⁻	[P] ³⁻	- ion 8
Br ⁻	[Br] ⁻	- ion 8

* Ions

+ : 0
- : 8

Dot Structure

15
8 2
4 X 6
7 3

Ions

Cation(+)

[A]⁺

Anion(-)

[B]⁻

Formula

Complete the following chart for lewis dot structures for both neutral and ion structures

HNF ₂				CH ₃ Cl			
N	group 15 5	F	group 17 7	C	group 14 4	H	group 1 1
Val e ⁻		Val e ⁻		Val e ⁻		Val e ⁻	
Covalent Compound Structural Formula				Covalent Compound Structural Formula			
N: val e⁻ - # single bonds 5 - 3 = 2 ← # dots							

— = 1 dot

dot = Val e⁻

e⁻ pairs = val e⁻ - # —

H —

0 dots

15

— X —

16

— X —

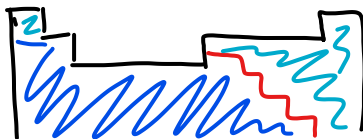
17

— X —

0 dots

Calculate the Electronegativity for the following molecules, and polarity

Metal



* Use Chart!

ED =
High-Low
(+)

Ionic – ED > 1.9 <i>or metal</i>		Polar – ED 0.5 – 1.9		Non-Polar – ED < 0.5	
Fe - Cl		H - P Br <i>no metals!</i>		C - S	
*Elect. Fe	Elect. Cl	Elect. H	Elect. P Br	Elect. C	Elect. S
1.8	3.0	2.1	2.8	2.5	2.5
Electronegativity Difference		Electronegativity Difference		Electronegativity Difference	
ED = 3.0 - 1.8 = 1.2		ED = 2.8 - 2.1 = 0.7		ED = 2.5 - 2.5 = 0.0	
Bond Type (Ionic, Polar, Non-Polar)		Bond Type (Ionic, Polar, Non-Polar)		Bond Type ** (Ionic, Polar, Non-Polar)	
Ionic		Polar		Non-Polar	

Nonmetal
Ionic
Metal
Covalent
NonMetal
Polar
ED > 0.5
Non-Polar
ED ≤ 0.5

Calculate the electronegativity, then use the electronegativity and molecule structure to determine molecule polarity.

*Molecule

Type

Symmetrical

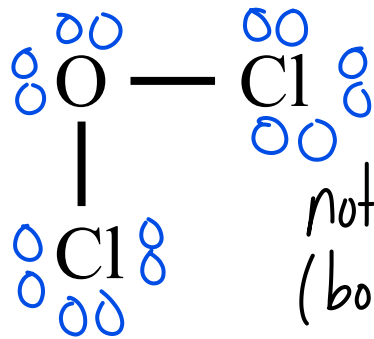
Non-Polar

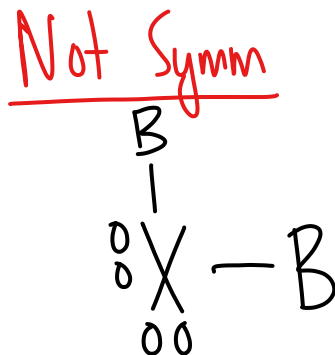
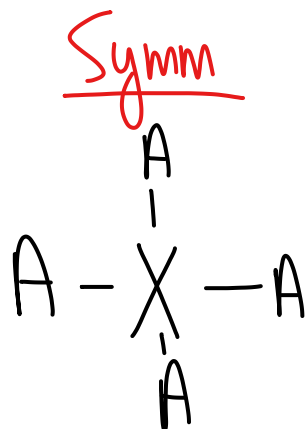
Not Symm

Polar = Polar

Non-Polar =

Non-Polar

OCl ₂		Atomic Structure	
Elect. O	Elect. Cl	 not symm (bond type)	
3.5	3.0		
Electronegativity Difference			
ED = 3.5 - 3.0 = 0.5		Bond Type**	Molecule Type*
		Non-Polar	Non-Polar



****** Polar
Non-Polar
Ionic