

Name: _____ Per: _____ Date: _____

The table below shows the electronegativity values for most elements in the periodic table. Determine if the bonds in the compounds below are **ionic**, **polar** or **nonpolar** based on the electronegativity differences.

Pauling's Electronegativity Scale:

H																		He
2.1																		-
Li	Be												B	C	N	O	F	Ne
1.0	1.5												2.0	2.5	3.0	3.5	4.0	-
Na	Mg												Al	Si	P	S	Cl	Ar
0.9	1.2												1.5	1.8	2.1	2.5	3.0	-
K	Ca	Sc	Ti	V	Cr	Mn	Fe	Co	Ni	Cu	Zn	Ga	Ge	As	Se	Br	Kr	
0.8	1.0	1.3	1.5	1.6	1.6	1.5	1.8	1.8	1.8	1.9	1.6	1.6	1.8	2.0	2.4	2.8	-	
Rb	Sr	Y	Zr	Nb	Mo	Tc	Ru	Rh	Pd	Ag	Cd	In	Sn	Sb	Te	I	Xe	
0.8	1.0	1.2	1.4	1.6	1.8	1.9	2.2	2.2	2.2	1.9	1.7	1.7	1.8	1.9	2.1	2.5	-	
Cs	Ba	Lu	Hf	Ta	W	Re	Os	Ir	Pt	Au	Hg	Tl	Pb	Bi	Po	At	Rn	
0.7	0.9	1.1	1.3	1.5	1.7	1.9	2.2	2.2	2.2	2.4	1.9	1.8	1.8	1.9	2.0	2.2	-	
		La	Ce	Pr	Nd	Pm	Sm	Eu	Gd	Tb	Dy	Ho	Er	Tm	Yb			
		1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1			
		Ac	Th	Pa	U	Np	Pu	Am	Cm	Bk	Cf	Es	Fm	Md	No			
		1.1	1.3	1.5	1.7	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3			

According to Brown, Lemay and Bursten, page 313, if the difference in electronegativities of the two atoms in a bond is *less than 0.5*, the bond is considered **nonpolar**. If the difference is *greater than or equal to 0.5* and less than 2.0 it is considered **polar**. If the difference is *greater than or equal to 2.0*, it is considered **ionic**. (NOTE: In other reference materials the rule of a difference 1.7 to characterize bonds as ionic or covalent)

- | | |
|---------------------------------------|-----------------------------|
| 1. BCl₃ | 8. NH₃ |
| 2. OF₂ | 9. ClF₃ |
| 3. H₂S | 10. PbS |
| 4. BeI₂ | 11. NaH |
| 5. CS₂ | 12. SO₂ |
| 6. BrO₃⁻ | 13. AlCl₃ |
| 7. CCl₄ | 14. SnCl₄ |