

INTRODUCTION: Type of Bonds

NAME _____

REVIEWING ELECTRONEGATIVITY

Before beginning the review watch the following video: (1:40)

<https://www.youtube.com/watch?v=EAMJoVuOSw4>

This activity will provide an opportunity to examine the periodic table more closely. Use the interactive periodic table (see link below) to explore trends of electronegativity across a period and down a group on the periodic table.

Go to <http://www.ptable.com/> and click on the properties tab near the upper left of the screen

Electronegativity: (click on electronegativity in the options in the middle of the screen)

1) Define electronegativity:

2) Examine the trend in electronegativity from left to right across a period by clicking on all the elements in the 2nd period. List their electronegativity below (this quantity is a relative scale without a unit).

Li _____, Be _____, B, _____, C _____, N _____, O _____, F _____, Ne _____

3) What is the trend in electronegativity from left to right across a period?

4) Examine the trend in electronegativity from top to bottom down a group by clicking on all the elements in the 1st group.

List their electronegativity values below (this quantity is a relative scale without a unit).

Li _____, Na _____, K, _____, Rb _____, Cs _____, Fr _____

5) What is the trend in electronegativity from top to bottom down a group?

6) Without looking at their electronegativity on the periodic table, try to organize the following elements in order of increasing electronegativity: Ca, Li, C, As F. *then check your answer using the ptable!

7) Provide an argument detailing why noble gases typically do NOT have electronegativity values.

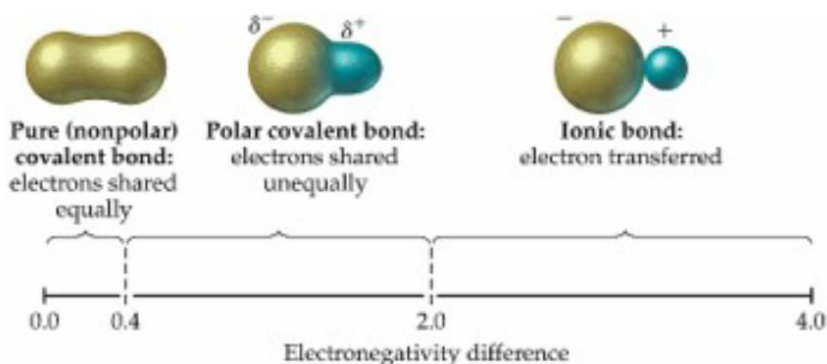
Watch the following video and take notes on how we find out the type of bond that will form using electronegativity values.

<https://www.youtube.com/watch?v=PoQjsnQmxok>

After watching the video complete page 2 of this activity

Bond Type

When atoms combine, there is a 'tug of war' over their valence electrons. The type of bond that forms depends on the outcome of the tug of war and is determined by the relative strengths of the forces exerted by the atoms. The electronegativity provides a measure of those forces. when the electronegativity differences is great than or equal to 2.0, the atoms with the greater electronegativity gains the electron, and an **ionic bond** is formed. Electronegativity differences below 2.0 result in covalent bonds or sharing. If the electronegativity differences is close to zero (<0.4), the atoms share equally and a **non-polar bond** forms. Higher electronegativity differences (still below 1.7) result in unequal sharing or **polar bonds**.



Fill in the table below by looking up the electronegativities of the elements in each compound. Determine the electronegativity difference and the bond type.

Compound	Electronegativity		Electronegativity Difference	Bond Type (Ionic, Polar covalent, Non-polar covalent)
	Metal (low)	Non-metal (high)		
NaBr	0.9	3.0	2.1	ionic
HCl				
H ₂ Te				
KI				
SO ₂				
H ₂ O				
CS ₂				
N ₂ O ₅				
MgO				

↑
First Element

↑
Second Element

Given in this

Given in this

Column

Column