

ASSESSMENT – STUDENT ACTIVITY SHEET

Let Us Bond Together!

Name: _____ Date: _____ Period _____

OBSERVATIONS: Single Band Double Band Triple Band
WEIGHT TO BREAK: _____ grams _____ grams _____ grams

Prediction of relative strengths of single, double, and triple bonds.

Group # for Carbon = _____ Number of Valence electrons _____
Number of electrons needed for Carbon to reach stability _____
Maximum number of single bonds carbon can form _____
Maximum number of double bonds carbon can form _____
Maximum number of triple bonds carbon can form _____
Group # for hydrogen = _____ Number of valence electrons _____
Number of electrons needed for hydrogen to reach stability _____
Maximum number of single bonds that hydrogen can form _____
Maximum number of double bonds that hydrogen can form _____
Maximum number of triple bonds that hydrogen can form _____

Bond illustration of double carbon chains:

C_2H_6	C_2H_4	C_2H_2

Which compound would be the hardest to break apart? _____

Predict the level of the electronegativity values for the following 10 elements based on their periodic locations:

(a) None (b) Low (c) Moderate (d) High

- | | |
|-------------------|-------------------|
| 1. Sodium _____ | 6. Calcium _____ |
| 2. Fluorine _____ | 7. Mercury _____ |
| 3. Xenon _____ | 8. Aluminum _____ |
| 4. Iron _____ | 9. Silicon _____ |
| 5. Sulfur _____ | 10. Oxygen _____ |

Predict the types of bonds that will form between each of the following pairs of elements based on their periodic locations: (a) Non-polar Covalent (b) Polar Covalent (c) Ionic.

- | | | | |
|-------------------------|-------|---------------------------|-------|
| 1. Potassium + Chlorine | _____ | 6. Nitrogen + Nitrogen | _____ |
| 2. Iodine + Iodine | _____ | 7. Aluminum + Bromine | _____ |
| 3. Iron + Sulfur | _____ | 8. Hydrogen + Oxygen | _____ |
| 4. Xenon + Oxygen | _____ | 9. Lead + Selenium | _____ |
| 5. Calcium + Fluorine | _____ | 10. Lithium + Phosphorous | _____ |

6. Fill in the following chart showing an understanding of predicting the central atom, bonding atom(s) and kind of bond (single, double, triple) that forms during the creation of a compound from its component elements based on their electronegativities values as determined from their periodic locations.

COMPOUND FORMED	CENTRAL ATOM	BONDING ATOM(S)	KIND OF BOND
1. KCl			
2. I ₂			
3. FeS			
4. XeO ₄			
5. CaF ₂			
6. N ₂			
7. AlBr ₃			
8. H ₂ O			
9. PbSe ₂			
10. Li ₃ P			

Models of bond types and kinds in selected compounds:

1. Chlorine – Cl₂
2. Nitrogen – N₂
3. Carbon Dioxide – CO₂
4. Aluminum Bromide – AlBr₃
5. Ammonia – NH₃
6. Zinc Sulfide – ZnS
7. Lithium Fluoride – LiF
8. Calcium Oxide – CaO
9. Lead Chloride – PbCl₄
10. Potassium Nitride – K₃N