# Bonding Activity Part III: How do you know which atoms will be attracted to each other?

A. Match up the cards that have the same number of unpaired electrons. In column A, write down 6 possible pairs of atoms. You can use an atom or element more than once.

For example: Oxygen (2 unpaired electrons) & Barium (2 unpaired electrons)

B. Take the 6 pairs that you came up with and calculate their electronegativity difference for column B.

 For example: Oxygen (EN= 3.4) – Barium (EN= 0.9) = 2.5 electronegativity difference

C. Place your paired cards on the bonding scale at the lab table based on their electronegativity differences and identify the bond type in column C.

 For example: Electronegativity difference greater than 1.7 🡪 Ionic bond

|  |  |  |
| --- | --- | --- |
| **A. Pair of atoms that have the same number of unpaired electrons.** | **B. Electronegativity difference (show the math you did)** | **C. Identify bond type (nonpolar covalent, polar covalent, ionic)** |
| Oxygen and Barium (2 unpaired electrons each) | 3.4 (O) – 0.9 (Ba) = 2.5 | Ionic bond |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |

D. Redraw the bonding scale in the box below and label where each bonded pair of atoms would go according to their electronegativity differences. WRITE THE ATOM WITH THE LOWER ELECTRONEGATIVITY VALUE FIRST. (Ex: BaO)

|  |
| --- |
|  |

E. Answer the following questions.

1. What is the electronegativity difference range for…

 a. a nonpolar covalent bond? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 b. a polar covalent bond? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 c. an ionic bond? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

2. What type of atoms (metals and/or nonmetals), make up…

a. a nonpolar covalent bond? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 b. a polar covalent bond? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 c. an ionic bond? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

3. How do you know which atoms will be attracted to each other?

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

4. How do you identify the type of bond that two atoms will have with each other?

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_