

Exercise 8.3

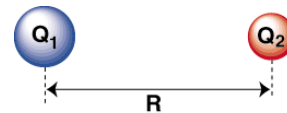
Coulomb's Law and Bond Polarity

Name: _____

Date: _____ Per: _____

DIRECTIONS: Answer the following in the space provided:

1. Consider the electric force between a pair of charged particles a certain distance apart. By Coulomb's Law:



$$E = \frac{kQ_1Q_2}{R}$$

- _____ a. If the charge of one of the particles is doubled, the force is:
 A. unchanged B. halved C. doubled D. quadrupled
- _____ b. If, instead, the charge of both particles is doubled, the force is:
 A. unchanged B. halved C. doubled D. quadrupled
- _____ c. If, instead, the distance between the particles is doubled, the force becomes:
 A. one fourth B. halved C. doubled D. quadrupled
- _____ d. If the distance is halved and the charges of both particles are doubled, the force is _____ as great.

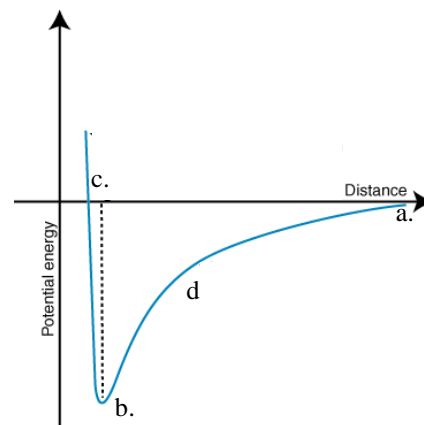
2. Describe the following labeled points on the particle interaction graph at right.

- a. _____

- b. _____

- c. _____

- d. _____



3. Which of the following incorrectly show the bond polarity? _____
 Show the correct bond polarity (above the bond) for those that are incorrect.

A. $\delta^+H-F\delta^-$ B. $\delta^+Cl-I\delta^-$ C. $\delta^+Si-S\delta^-$ D. $\delta^+Br-Br\delta^-$ E. $\delta^+O-P\delta^-$

4. Predict the type of bond (ionic, covalent, or polar covalent) one would expect to form between the following pairs of elements.

a. Rb and Cl _____ d. Ba and S _____
 b. S and S _____ e. N and P _____
 c. C and F _____ f. B and H _____

5. Hydrogen has an electronegativity value between boron and carbon and identical to phosphorus. With this in mind, rank the following bonds in order of decreasing polarity: P-H, O-H, N-H, F-H, C-H

Most _____ Least

6. Arrange the following lists of bonds from most to least polar:

a. N-F, O-F, C-F _____
 b. C-F, N-O, Si-F _____
 c. Cl-Cl, B-Cl, S-Cl _____

7. Write electron configurations for the most stable ion formed by each of the following elements Al, Ba, Se, and I (when in stable ionic compounds).

a. Al _____ c. Se _____
 b. Ba _____ d. I _____